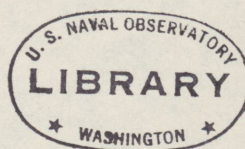


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UNITED STATES NAVAL OBSERVATORY
C I R C U L A R N O. 1 3 9

U. S. Naval Observatory, Washington, D. C. 20390

December 1, 1972



ASTROMETRIC EPHEMERIS OF PLUTO
1970-1990

by

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ASTROMETRIC EPHEMERIS OF PLUTO 1970-1990

Based on the new integrated ephemeris of Pluto (Cohen, C. J., Hubbard, E. C., Oesterwinter, C. 1967, *Astr. Jour.* **72**, 973), the astrometric ephemeris of Pluto was calculated. The method of calculating the ephemeris differs from that illustrated in the *Explanatory Supplement* (pp. 126-129) in that the aberration corrections are applied in rectangular coordinates, and conversion to spherical coordinates is only made at the end.

The method of calculating this astrometric ephemeris is the same as that used for the *American Ephemeris and Nautical Almanac*, but the basic ephemeris of Pluto is different.

The nine columns tabulated are, from left to right:

- (1) the date;
- (2) the astrometric right ascension, referred to the mean equinox and equator of 1950.0;
- (3) the right ascension first difference (seconds of time);
- (4) the astrometric declination, referred to the mean equinox and equator of 1950.0;
- (5) the declination first difference (seconds of arc);
- (6) the horizontal parallax (seconds of arc);
- (7) the true distance (astronomical units);
- (8) the true distance first difference (the right-most digits only); and
- (9) the ephemeris transit.

The astrometric position of Pluto is directly comparable with the mean places of stars as given in star catalogues (corrected for proper motion and annual parallax, if significant, to the epoch of observation), it being only necessary to correct the observations for geocentric parallax. The true distance is the actual geocentric distance at the tabular time, not at the instant when the light that reaches the observer at the tabular time left the planet. The horizontal parallax is the solar parallax divided by the geocentric distance. The ephemeris transit is the Ephemeris Time at the instant of transit across the ephemeris meridian.

--- 1970 ---

DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS		
		H	M	S	S	O	'	"	"	"	AU		H	M	
JAN	2	12	15	13.708	+ 1.313	+15	37	52.11	+134.72	0.28	31.437757	- 66444	5	31	
	6	12	15	15.021	- 0.705	+15	40	6.83	+145.58	0.28	31.371313	- 64990	5	15	
	10	12	15	14.316	- 2.701	+15	42	32.41	+155.54	0.28	31.306323	- 63196	4	59	
	14	12	15	11.615	- 4.657	+15	45	7.95	+164.53	0.28	31.243127	- 61090	4	43	
	18	12	15	6.958	- 6.564	+15	47	52.48	+172.55	0.28	31.182037	- 58697	4	27	
	22	12	15	0.394	- 8.419	+15	50	45.03	+179.60	0.28	31.123340	- 56033	4	12	
	26	12	14	51.975	-10.215	+15	53	44.63	+185.67	0.28	31.067307	- 53106	3	56	
	30	12	14	41.760	-11.945	+15	56	50.30	+190.68	0.28	31.014201	- 49916	3	40	
	FEB	3	12	14	29.815	-13.596	+16	0	0.98	+194.57	0.28	30.964285	- 46462	3	24
		7	12	14	16.219	-15.147	+16	3	15.55	+197.19	0.28	30.917823	- 42762	3	8
	11	12	14	1.072	-16.584	+16	6	32.74	+198.55	0.28	30.875061	- 38860	2	52	
	15	12	13	44.488	-17.902	+16	9	51.29	+198.69	0.29	30.836201	- 34791	2	36	
	19	12	13	26.586	-19.100	+16	13	9.98	+197.69	0.29	30.801410	- 30578	2	20	
	23	12	13	7.486	-20.174	+16	16	27.67	+195.54	0.29	30.770832	- 26235	2	4	
	27	12	12	47.312	-21.122	+16	19	43.21	+192.27	0.29	30.744597	- 21772	1	48	
MAR	3	12	12	26.190	-21.933	+16	22	55.48	+187.82	0.29	30.722825	- 17199	1	32	
	7	12	12	4.257	-22.594	+16	26	3.30	+182.15	0.29	30.705626	- 12541	1	16	
	11	12	11	41.663	-23.094	+16	29	5.45	+175.31	0.29	30.693085	- 7849	1	0	
	15	12	11	18.569	-23.439	+16	32	0.76	+167.44	0.29	30.685236	- 3161	0	44	
	19	12	10	55.130	-23.632	+16	34	48.20	+158.63	0.29	30.682075	+ 1502	0	27	
	23	12	10	31.498	-23.680	+16	37	26.83	+148.96	0.29	30.683577	+ 6123	0	11	
	27	12	10	7.818	-23.582	+16	39	55.79	+138.47	0.29	30.689700	+ 10696	23	51	
	31	12	9	44.236	-23.337	+16	42	14.26	+127.15	0.29	30.700396	+ 15210	23	35	
	APR	4	12	9	20.899	-22.936	+16	44	21.41	+115.03	0.29	30.715606	+ 19635	23	19
		8	12	8	57.963	-22.380	+16	46	16.44	+102.19	0.29	30.735241	+ 23926	23	3
	12	12	8	35.583	-21.682	+16	47	58.63	+ 88.83	0.29	30.759167	+ 28051	22	47	
	16	12	8	13.901	-20.850	+16	49	27.46	+ 75.03	0.29	30.787218	+ 31996	22	31	
	20	12	7	53.051	-19.898	+16	50	42.49	+ 60.92	0.29	30.819214	+ 35754	22	15	
	24	12	7	33.153	-18.831	+16	51	43.41	+ 46.51	0.29	30.854968	+ 39327	21	58	
	28	12	7	14.322	-17.651	+16	52	29.92	+ 31.84	0.28	30.894295	+ 42707	21	42	
MAY	2	12	6	56.671	-16.356	+16	53	1.76	+ 16.91	0.28	30.937002	+ 45867	21	26	
	6	12	6	40.315	-14.952	+16	53	18.67	+ 1.87	0.28	30.982869	+ 48776	21	10	
	10	12	6	25.363	-13.457	+16	53	20.54	- 13.15	0.28	31.031645	+ 51411	20	54	
	14	12	6	11.906	-11.885	+16	53	7.39	- 28.01	0.28	31.083056	+ 53771	20	39	
	18	12	6	0.021	-10.249	+16	52	39.38	- 42.68	0.28	31.136827	+ 55859	20	23	
	22	12	5	49.772	- 8.556	+16	51	56.70	- 57.09	0.28	31.192686	+ 57688	20	7	
	26	12	5	41.216	- 6.809	+16	50	59.61	- 71.31	0.28	31.250374	+ 59255	19	51	
	30	12	5	34.407	- 5.008	+16	49	48.30	- 85.26	0.28	31.309629	+ 60542	19	35	
	JUNE	3	12	5	29.399	- 3.165	+16	48	23.04	- 98.86	0.28	31.370171	+ 61525	19	19
		7	12	5	26.234	- 1.295	+16	46	44.18	-111.98	0.28	31.431696	+ 62199	19	3
	11	12	5	24.939	+ 0.589	+16	44	52.20	-124.52	0.28	31.493895	+ 62570	18	48	
	15	12	5	25.528	+ 2.473	+16	42	47.68	-136.48	0.28	31.556465	+ 62652	18	32	
	19	12	5	28.001	+ 4.351	+16	40	31.20	-147.85	0.28	31.619117	+ 62464	18	16	
	23	12	5	32.352	+ 6.225	+16	38	3.35	-158.67	0.28	31.681581	+ 62014	18	1	
	27	12	5	38.577	+ 8.092	+16	35	24.68	-168.93	0.28	31.743595	+ 61283	17	45	

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS	
		H	M	S	S	O	'	"	"	"	AU		H	M
JULY	1	12	5	46.669	+ 9.943	+16	32	35.75	-178.53	0.28	31.804878	+ 60262	17	29
	5	12	5	56.612	+11.762	+16	29	37.22	-187.37	0.28	31.865140	+ 58951	17	14
	9	12	6	8.374	+13.540	+16	26	29.85	-195.41	0.28	31.924091	+ 57368	16	58
	13	12	6	21.914	+15.264	+16	23	14.44	-202.65	0.27	31.981459	+ 55534	16	43
	17	12	6	37.178	+16.934	+16	19	51.79	-209.12	0.27	32.036993	+ 53473	16	27
AUG	21	12	6	54.112	+18.552	+16	16	22.67	-214.89	0.27	32.090466	+ 51196	16	12
	25	12	7	12.664	+20.117	+16	12	47.78	-219.94	0.27	32.141662	+ 48688	15	57
	29	12	7	32.781	+21.621	+16	9	7.84	-224.16	0.27	32.190350	+ 45946	15	41
	2	12	7	54.402	+23.050	+16	5	23.68	-227.51	0.27	32.236296	+ 42981	15	26
	6	12	8	17.452	+24.396	+16	1	36.17	-229.98	0.27	32.279277	+ 39816	15	10
	10	12	8	41.848	+25.654	+15	57	46.19	-231.56	0.27	32.319093	+ 36477	14	55
	14	12	9	7.502	+26.821	+15	53	54.63	-232.32	0.27	32.355570	+ 32989	14	40
	18	12	9	34.323	+27.904	+15	50	2.31	-232.33	0.27	32.388559	+ 29368	14	25
	22	12	10	2.227	+28.903	+15	46	9.98	-231.56	0.27	32.417927	+ 25602	14	9
	26	12	10	31.130	+29.810	+15	42	18.42	-229.95	0.27	32.443529	+ 21691	13	54
SEPT	30	12	11	0.940	+30.613	+15	38	28.47	-227.44	0.27	32.465220	+ 17655	13	39
	3	12	11	31.553	+31.309	+15	34	41.03	-224.05	0.27	32.482875	+ 13521	13	24
	7	12	12	2.862	+31.891	+15	30	56.98	-219.80	0.27	32.496396	+ 9319	13	8
	11	12	12	34.753	+32.361	+15	27	17.18	-214.77	0.27	32.505715	+ 5078	12	53
	15	12	13	7.114	+32.730	+15	23	42.41	-209.02	0.27	32.510793	+ 809	12	38
OCT	19	12	13	39.844	+32.995	+15	20	13.39	-202.56	0.27	32.511602	- 3494	12	23
	23	12	14	12.839	+33.150	+15	16	50.83	-195.30	0.27	32.508108	- 7826	12	8
	27	12	14	45.989	+33.187	+15	13	35.53	-187.24	0.27	32.500282	- 12161	11	52
	1	12	15	19.176	+33.102	+15	10	28.29	-178.39	0.27	32.488121	- 16471	11	37
	5	12	15	52.278	+32.893	+15	7	29.90	-168.82	0.27	32.471650	- 20722	11	22
	9	12	16	25.171	+32.566	+15	4	41.08	-158.60	0.27	32.450928	- 24886	11	7
	13	12	16	57.737	+32.131	+15	2	2.48	-147.84	0.27	32.426042	- 28953	10	52
	17	12	17	29.868	+31.587	+14	59	34.64	-136.52	0.27	32.397089	- 32927	10	37
	21	12	18	1.455	+30.932	+14	57	18.12	-124.58	0.27	32.364162	- 36800	10	21
	25	12	18	32.387	+30.158	+14	55	13.54	-112.07	0.27	32.327362	- 40547	10	6
NOV	29	12	19	2.545	+29.265	+14	53	21.47	- 99.00	0.27	32.286815	- 44134	9	51
	2	12	19	31.810	+28.254	+14	51	42.47	- 85.47	0.27	32.242681	- 47530	9	36
	6	12	20	0.064	+27.137	+14	50	17.00	- 71.62	0.27	32.195151	- 50712	9	20
	10	12	20	27.201	+25.923	+14	49	5.38	- 57.51	0.27	32.144439	- 53673	9	5
	14	12	20	53.124	+24.618	+14	48	7.87	- 43.16	0.27	32.090766	- 56419	8	50
	18	12	21	17.742	+23.217	+14	47	24.71	- 28.57	0.27	32.034347	- 58944	8	35
	22	12	21	40.959	+21.721	+14	46	56.14	- 13.76	0.28	31.975403	- 61222	8	19
	26	12	22	2.680	+20.130	+14	46	42.38	+ 1.19	0.28	31.914181	- 63227	8	4
	30	12	22	22.810	+18.454	+14	46	43.57	+ 16.14	0.28	31.850954	- 64933	7	48
	4	12	22	41.264	+16.706	+14	46	59.71	+ 30.98	0.28	31.786021	- 66322	7	33
DEC	8	12	22	57.970	+14.901	+14	47	30.69	+ 45.57	0.28	31.719699	- 67402	7	18
	12	12	23	12.871	+13.046	+14	48	16.26	+ 59.93	0.28	31.652297	- 68183	7	2
	16	12	23	25.917	+11.139	+14	49	16.19	+ 74.03	0.28	31.584114	- 68666	6	47
	20	12	23	37.056	+ 9.188	+14	50	30.22	+ 87.83	0.28	31.515448	- 68831	6	31
	24	12	23	46.244	+ 7.195	+14	51	58.05	+101.21	0.28	31.446617	- 68667	6	15
	28	12	23	53.439	+ 5.176	+14	53	39.26	+114.04	0.28	31.377950	- 68152	6	0

ASTROMETRIC POSITIONS OF PLUTO 1970-1990 FOR OH ET

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DATE		RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H M S	S	O ' "	"	"	AU		H M
JAN	1	12 23 58.615	+ 3.149	+14 55 33.30	+126.19	0.28	31.309798	- 67289	5 44
	5	12 24 1.764	+ 1.128	+14 57 39.49	+137.56	0.28	31.242509	- 66097	5 28
	9	12 24 2.892	- 0.874	+14 59 57.05	+148.13	0.28	31.176412	- 64599	5 13
	13	12 24 2.018	- 2.859	+15 2 25.18	+157.94	0.28	31.111813	- 62803	4 57
	17	12 23 59.159	- 4.817	+15 5 3.12	+166.89	0.28	31.049010	- 60707	4 41
FEB	21	12 23 54.342	- 6.739	+15 7 50.01	+174.93	0.28	30.988303	- 58305	4 25
	25	12 23 47.603	- 8.614	+15 10 44.94	+181.93	0.28	30.929998	- 55597	4 10
	29	12 23 38.989	-10.416	+15 13 46.87	+187.74	0.28	30.874401	- 52598	3 54
	2	12 23 28.573	-12.134	+15 16 54.61	+192.38	0.29	30.821803	- 49344	3 38
	6	12 23 16.439	-13.760	+15 20 6.99	+195.87	0.29	30.772459	- 45870	3 22
	10	12 23 2.679	-15.291	+15 23 22.86	+198.23	0.29	30.726589	- 42192	3 6
	14	12 22 47.388	-16.724	+15 26 41.09	+199.46	0.29	30.684397	- 38316	2 50
	18	12 22 30.664	-18.050	+15 30 0.55	+199.52	0.29	30.646081	- 34253	2 34
	22	12 22 12.614	-19.256	+15 33 20.07	+198.34	0.29	30.611828	- 30010	2 18
	26	12 21 53.358	-20.328	+15 36 38.41	+195.84	0.29	30.581818	- 25616	2 2
MAR	2	12 21 33.030	-21.251	+15 39 54.25	+192.11	0.29	30.556202	- 21119	1 46
	6	12 21 11.779	-22.030	+15 43 6.36	+187.22	0.29	30.535083	- 16556	1 30
	10	12 20 49.749	-22.666	+15 46 13.58	+181.29	0.29	30.518527	- 11947	1 14
	14	12 20 27.083	-23.159	+15 49 14.87	+174.31	0.29	30.506580	- 7302	0 58
	18	12 20 3.924	-23.509	+15 52 9.18	+166.33	0.29	30.499278	- 2635	0 41
APR	22	12 19 40.415	-23.707	+15 54 55.51	+157.31	0.29	30.496643	+ 2040	0 25
	26	12 19 16.708	-23.743	+15 57 32.82	+147.28	0.29	30.498683	+ 6693	0 9
	30	12 18 52.965	-23.617	+16 0 0.10	+136.34	0.29	30.505376	+ 11273	23 49
	3	12 18 29.348	-23.338	+16 2 16.44	+124.65	0.29	30.516649	+ 15748	23 33
	7	12 18 6.010	-22.914	+16 4 21.09	+112.32	0.29	30.532397	+ 20106	23 17
	11	12 17 43.096	-22.355	+16 6 13.41	+ 99.43	0.29	30.552503	+ 24335	23 1
	15	12 17 20.741	-21.662	+16 7 52.84	+ 85.99	0.29	30.576838	+ 28431	22 45
	19	12 16 59.079	-20.835	+16 9 18.83	+ 72.04	0.29	30.605269	+ 32383	22 29
	23	12 16 38.244	-19.871	+16 10 30.87	+ 57.60	0.29	30.637652	+ 36159	22 12
	27	12 16 18.373	-18.775	+16 11 28.47	+ 42.83	0.29	30.673811	+ 39721	21 56
MAY	1	12 15 59.598	-17.566	+16 12 11.30	+ 27.89	0.29	30.713532	+ 43046	21 40
	5	12 15 42.032	-16.254	+16 12 39.19	+ 12.89	0.29	30.756578	+ 46131	21 24
	9	12 15 25.778	-14.853	+16 12 52.08	- 2.13	0.29	30.802709	+ 48977	21 8
	13	12 15 10.925	-13.368	+16 12 49.95	- 17.12	0.29	30.851686	+ 51587	20 52
	17	12 14 57.557	-11.802	+16 12 32.83	- 32.09	0.28	30.903273	+ 53955	20 36
	21	12 14 45.755	-10.154	+16 12 0.74	- 46.99	0.28	30.957228	+ 56059	20 21
	25	12 14 35.601	- 8.435	+16 11 13.75	- 61.68	0.28	31.013287	+ 57869	20 5
	29	12 14 27.166	- 6.664	+16 10 12.07	- 76.02	0.28	31.071156	+ 59376	19 49
	2	12 14 20.502	- 4.856	+16 8 56.05	- 89.92	0.28	31.130532	+ 60589	19 33
	6	12 14 15.646	- 3.020	+16 7 26.13	-103.40	0.28	31.191121	+ 61519	19 17
JUNE	10	12 14 12.626	- 1.164	+16 5 42.73	-116.40	0.28	31.252640	+ 62178	19 1
	14	12 14 11.462	+ 0.714	+16 3 46.33	-129.00	0.28	31.314818	+ 62565	18 46
	18	12 14 12.176	+ 2.609	+16 1 37.33	-141.10	0.28	31.377383	+ 62663	18 30
	22	12 14 14.785	+ 4.510	+15 59 16.23	-152.62	0.28	31.440046	+ 62456	18 14
	26	12 14 19.295	+ 6.403	+15 56 43.61	-163.46	0.28	31.502502	+ 61945	17 59
	30	12 14 25.698	+ 8.272	+15 54 0.15	-173.55	0.28	31.564447	+ 61149	17 43

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DATE		RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H M S	S	O ' "	"	"	AU		H M
JULY	4	12 14 33.970	+10.111	+15 51 6.60	-182.92	0.28	31.625596	+ 60086	17 27
	8	12 14 44.081	+11.914	+15 48 3.68	-191.60	0.28	31.685682	+ 58772	17 12
	12	12 14 55.995	+13.686	+15 44 52.08	-199.61	0.28	31.744454	+ 57215	16 56
	16	12 15 9.681	+15.422	+15 41 32.47	-206.92	0.28	31.801669	+ 55399	16 41
	20	12 15 25.103	+17.114	+15 38 5.55	-213.44	0.28	31.857068	+ 53318	16 25
	24	12 15 42.217	+18.745	+15 34 32.11	-219.10	0.28	31.910386	+ 50983	16 10
	28	12 16 0.962	+20.308	+15 30 53.01	-223.88	0.28	31.961369	+ 48418	15 55
AUG	1	12 16 21.270	+21.795	+15 27 9.13	-227.81	0.27	32.009787	+ 45646	15 39
	5	12 16 43.065	+23.208	+15 23 21.32	-230.93	0.27	32.055433	+ 42691	15 24
	9	12 17 6.273	+24.549	+15 19 30.39	-233.30	0.27	32.098124	+ 39559	15 8
	13	12 17 30.822	+25.818	+15 15 37.09	-234.89	0.27	32.137683	+ 36239	14 53
	17	12 17 56.640	+27.003	+15 11 42.20	-235.60	0.27	32.173922	+ 32731	14 38
	21	12 18 23.643	+28.096	+15 7 46.60	-235.40	0.27	32.206653	+ 29057	14 23
	25	12 18 51.739	+29.087	+15 3 51.20	-234.29	0.27	32.235710	+ 25242	14 7
	29	12 19 20.826	+29.973	+14 59 56.91	-232.32	0.27	32.260952	+ 21316	13 52
SEPT	2	12 19 50.799	+30.759	+14 56 4.59	-229.53	0.27	32.282268	+ 17300	13 37
	6	12 20 21.558	+31.447	+14 52 15.06	-226.01	0.27	32.299568	+ 13207	13 22
	10	12 20 53.005	+32.039	+14 48 29.05	-221.71	0.27	32.312775	+ 9027	13 6
	14	12 21 25.044	+32.525	+14 44 47.34	-216.56	0.27	32.321802	+ 4767	12 51
	18	12 21 57.569	+32.895	+14 41 10.78	-210.54	0.27	32.326569	+ 451	12 36
	22	12 22 30.464	+33.146	+14 37 40.24	-203.67	0.27	32.327020	- 3888	12 21
	26	12 23 3.610	+33.276	+14 34 16.57	-196.02	0.27	32.323132	- 8219	12 6
	30	12 23 36.886	+33.291	+14 31 0.55	-187.68	0.27	32.314913	- 12520	11 51
OCT	4	12 24 10.177	+33.197	+14 27 52.87	-178.70	0.27	32.302393	- 16779	11 35
	8	12 24 43.374	+32.995	+14 24 54.17	-169.04	0.27	32.285614	- 21002	11 20
	12	12 25 16.369	+32.678	+14 22 5.13	-158.69	0.27	32.264612	- 25181	11 5
	16	12 25 49.047	+32.237	+14 19 26.44	-147.61	0.27	32.239431	- 29283	10 50
	20	12 26 21.284	+31.673	+14 16 58.83	-135.88	0.27	32.210148	- 33276	10 35
	24	12 26 52.957	+30.988	+14 14 42.95	-123.59	0.27	32.176872	- 37131	10 19
	28	12 27 23.945	+30.187	+14 12 39.36	-110.83	0.27	32.139741	- 40824	10 4
NOV	1	12 27 54.132	+29.285	+14 10 48.53	- 97.68	0.27	32.098917	- 44347	9 49
	5	12 28 23.417	+28.278	+14 9 10.85	- 84.12	0.27	32.054570	- 47709	9 34
	9	12 28 51.695	+27.166	+14 7 46.73	- 70.12	0.27	32.006861	- 50896	9 18
	13	12 29 18.861	+25.941	+14 6 36.61	- 55.75	0.28	31.955965	- 53878	9 3
	17	12 29 44.802	+24.609	+14 5 40.86	- 41.06	0.28	31.902087	- 56624	8 48
	21	12 30 9.411	+23.176	+14 4 59.80	- 26.20	0.28	31.845463	- 59110	8 33
	25	12 30 32.587	+21.654	+14 4 33.60	- 11.26	0.28	31.786353	- 61317	8 17
	29	12 30 54.241	+20.054	+14 4 22.34	+ 3.66	0.28	31.725036	- 63248	8 2
DEC	3	12 31 14.295	+18.384	+14 4 26.00	+ 18.55	0.28	31.661788	- 64912	7 46
	7	12 31 32.679	+16.639	+14 4 44.55	+ 33.42	0.28	31.596876	- 66300	7 31
	11	12 31 49.318	+14.822	+14 5 17.97	+ 48.20	0.28	31.530576	- 67388	7 16
	15	12 32 4.140	+12.938	+14 6 6.17	+ 62.77	0.28	31.463188	- 68156	7 0
	19	12 32 17.078	+11.004	+14 7 8.94	+ 76.99	0.28	31.395032	- 68585	6 45
	23	12 32 28.082	+ 9.030	+14 8 25.93	+ 90.74	0.28	31.326447	- 68671	6 29
	27	12 32 37.112	+ 7.038	+14 9 56.67	+103.93	0.28	31.257776	- 68428	6 13
	31	12 32 44.150	+ 5.029	+14 11 40.60	+116.55	0.28	31.189348	- 67877	5 58

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O ' "	"	"	AU		H M
JAN 4	12 32 49.179	+ 3.008	+14 13 37.15	+128.62	0.28	31.121471	- 67015	5 42
8	12 32 52.187	+ 0.980	+14 15 45.77	+140.03	0.28	31.054456	- 65830	5 27
12	12 32 53.167	- 1.045	+14 18 5.80	+150.67	0.28	30.988626	- 64315	5 11
16	12 32 52.122	- 3.051	+14 20 36.47	+160.41	0.28	30.924311	- 62464	4 55
20	12 32 49.071	- 5.019	+14 23 16.88	+169.15	0.28	30.861847	- 60292	4 39
24	12 32 44.052	- 6.931	+14 26 6.03	+176.83	0.29	30.801555	- 57827	4 23
28	12 32 37.121	- 8.783	+14 29 2.86	+183.49	0.29	30.743728	- 55100	4 8
FEB 1	12 32 28.338	-10.573	+14 32 6.35	+189.12	0.29	30.688628	- 52117	3 52
5	12 32 17.765	-12.292	+14 35 15.47	+193.69	0.29	30.636511	- 48883	3 36
9	12 32 5.473	-13.931	+14 38 29.16	+197.11	0.29	30.587628	- 45400	3 20
13	12 31 51.542	-15.475	+14 41 46.27	+199.29	0.29	30.542228	- 41678	3 4
17	12 31 36.067	-16.905	+14 45 5.56	+200.17	0.29	30.500550	- 37746	2 48
21	12 31 19.162	-18.208	+14 48 25.73	+199.77	0.29	30.462804	- 33644	2 32
25	12 31 0.954	-19.385	+14 51 45.50	+198.20	0.29	30.429160	- 29409	2 16
29	12 30 41.569	-20.435	+14 55 3.70	+195.49	0.29	30.399751	- 25058	2 0
MAR 4	12 30 21.134	-21.358	+14 58 19.19	+191.65	0.29	30.374693	- 20597	1 44
8	12 29 59.776	-22.144	+15 1 30.84	+186.66	0.29	30.354096	- 16040	1 28
12	12 29 37.632	-22.784	+15 4 37.50	+180.47	0.29	30.338056	- 11404	1 12
16	12 29 14.848	-23.266	+15 7 37.97	+173.12	0.29	30.326652	- 6724	0 56
20	12 28 51.582	-23.585	+15 10 31.09	+164.68	0.29	30.319928	- 2047	0 39
24	12 28 27.997	-23.750	+15 13 15.77	+155.31	0.29	30.317881	+ 2592	0 23
28	12 28 4.247	-23.766	+15 15 51.08	+145.12	0.29	30.320473	+ 7182	0 7
APR 1	12 27 40.481	-23.640	+15 18 16.20	+134.11	0.29	30.327655	+ 11712	23 47
5	12 27 16.841	-23.366	+15 20 30.31	+122.34	0.29	30.339367	+ 16171	23 31
9	12 26 53.475	-22.945	+15 22 32.65	+109.79	0.29	30.355538	+ 20543	23 15
13	12 26 30.530	-22.370	+15 24 22.44	+ 96.55	0.29	30.376081	+ 24793	22 59
17	12 26 8.160	-21.646	+15 25 58.99	+ 82.73	0.29	30.400874	+ 28878	22 43
21	12 25 46.514	-20.788	+15 27 21.72	+ 68.54	0.29	30.429752	+ 32774	22 27
25	12 25 25.726	-19.810	+15 28 30.26	+ 54.04	0.29	30.462526	+ 36478	22 10
29	12 25 5.916	-18.718	+15 29 24.30	+ 39.29	0.29	30.499004	+ 39987	21 54
MAY 3	12 24 47.198	-17.517	+15 30 3.59	+ 24.33	0.29	30.538991	+ 43296	21 38
7	12 24 29.681	-16.208	+15 30 27.92	+ 9.17	0.29	30.582287	+ 46394	21 22
11	12 24 13.473	-14.792	+15 30 37.09	- 6.12	0.29	30.628681	+ 49254	21 6
15	12 23 58.681	-13.278	+15 30 30.97	- 21.38	0.29	30.677935	+ 51843	20 50
19	12 23 45.403	-11.686	+15 30 9.59	- 36.47	0.29	30.729778	+ 54148	20 34
23	12 23 33.717	-10.032	+15 29 33.12	- 51.31	0.29	30.783926	+ 56179	20 19
27	12 23 23.685	- 8.322	+15 28 41.81	- 65.89	0.29	30.840105	+ 57943	20 3
31	12 23 15.363	- 6.563	+15 27 35.92	- 80.17	0.28	30.898048	+ 59444	19 47
JUNE 4	12 23 8.800	- 4.757	+15 26 15.75	- 94.18	0.28	30.957492	+ 60674	19 31
8	12 23 4.043	- 2.906	+15 24 41.57	-107.84	0.28	31.018166	+ 61618	19 15
12	12 23 1.137	- 1.023	+15 22 53.73	-121.01	0.28	31.079784	+ 62251	18 59
16	12 23 0.114	+ 0.872	+15 20 52.72	-133.58	0.28	31.142035	+ 62576	18 44
20	12 23 0.986	+ 2.769	+15 18 39.14	-145.53	0.28	31.204611	+ 62608	18 28
24	12 23 3.755	+ 4.658	+15 16 13.61	-156.86	0.28	31.267219	+ 62367	18 12
28	12 23 8.413	+ 6.536	+15 13 36.75	-167.58	0.28	31.329586	+ 61861	17 57

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DATE		RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H M S	S	O ' "	"	"	AU		H M
JULY	2	12 23 14.949	+ 8.404	+15 10 49.17	-177.70	0.28	31.391447	+ 61088	17 41
	6	12 23 23.353	+10.258	+15 7 51.47	-187.18	0.28	31.452535	+ 60039	17 25
	10	12 23 33.611	+12.085	+15 4 44.29	-195.91	0.28	31.512574	+ 58699	17 10
	14	12 23 45.696	+13.871	+15 1 28.38	-203.80	0.28	31.571273	+ 57080	16 54
	18	12 23 59.567	+15.603	+14 58 4.58	-210.86	0.28	31.628353	+ 55209	16 39
	22	12 24 15.170	+17.278	+14 54 33.72	-217.11	0.28	31.683562	+ 53104	16 23
AUG	26	12 24 32.448	+18.897	+14 50 56.61	-222.60	0.28	31.736666	+ 50783	16 8
	30	12 24 51.345	+20.458	+14 47 14.01	-227.35	0.28	31.787449	+ 48249	15 53
	3	12 25 11.803	+21.960	+14 43 26.66	-231.31	0.28	31.835698	+ 45490	15 37
	7	12 25 33.763	+23.394	+14 39 35.35	-234.39	0.28	31.881188	+ 42506	15 22
	11	12 25 57.157	+24.744	+14 35 40.96	-236.55	0.28	31.923694	+ 39315	15 7
	15	12 26 21.901	+26.004	+14 31 44.41	-237.79	0.28	31.963009	+ 35949	14 51
SEPT	19	12 26 47.905	+27.171	+14 27 46.62	-238.19	0.27	31.998958	+ 32429	14 36
	23	12 27 15.076	+28.247	+14 23 48.43	-237.77	0.27	32.031387	+ 28778	14 21
	27	12 27 43.323	+29.237	+14 19 50.66	-236.58	0.27	32.060165	+ 24997	14 5
	31	12 28 12.560	+30.137	+14 15 54.08	-234.57	0.27	32.085162	+ 21084	13 50
	4	12 28 42.697	+30.939	+14 11 59.51	-231.68	0.27	32.106246	+ 17040	13 35
	8	12 29 13.636	+31.630	+14 8 7.83	-227.85	0.27	32.123286	+ 12894	13 20
OCT	12	12 29 45.266	+32.206	+14 4 19.98	-223.16	0.27	32.136180	+ 8677	13 4
	16	12 30 17.472	+32.669	+14 0 36.82	-217.66	0.27	32.144857	+ 4418	12 49
	20	12 30 50.141	+33.021	+13 56 59.16	-211.40	0.27	32.149275	+ 137	12 34
	24	12 31 23.162	+33.268	+13 53 27.76	-204.44	0.27	32.149412	- 4160	12 19
	28	12 31 56.430	+33.409	+13 50 3.32	-196.73	0.27	32.145252	- 8477	12 4
	2	12 32 29.839	+33.434	+13 46 46.59	-188.20	0.27	32.136775	- 12803	11 49
NOV	6	12 33 3.273	+33.335	+13 43 38.39	-178.90	0.27	32.123972	- 17104	11 33
	10	12 33 36.608	+33.110	+13 40 39.49	-168.84	0.27	32.106868	- 21349	11 18
	14	12 34 9.718	+32.765	+13 37 50.65	-158.13	0.27	32.085519	- 25509	11 3
	18	12 34 42.483	+32.302	+13 35 12.52	-146.86	0.27	32.060010	- 29562	10 48
	22	12 35 14.785	+31.732	+13 32 45.66	-135.07	0.27	32.030448	- 33503	10 33
	26	12 35 46.517	+31.053	+13 30 30.59	-122.71	0.27	31.996945	- 37337	10 17
DEC	30	12 36 17.570	+30.257	+13 28 27.88	-109.78	0.28	31.959608	- 41046	10 2
	3	12 36 47.827	+29.341	+13 26 38.10	- 96.32	0.28	31.918562	- 44599	9 47
	7	12 37 17.168	+28.308	+13 25 1.78	- 82.40	0.28	31.873963	- 47962	9 32
	11	12 37 45.476	+27.162	+13 23 39.38	- 68.15	0.28	31.826001	- 51110	9 17
	15	12 38 12.638	+25.914	+13 22 31.23	- 53.65	0.28	31.774891	- 54026	9 1
	19	12 38 38.552	+24.576	+13 21 37.58	- 38.99	0.28	31.720865	- 56709	8 46
JAN	23	12 39 3.128	+23.148	+13 20 58.59	- 24.14	0.28	31.664156	- 59166	8 31
	27	12 39 26.276	+21.626	+13 20 34.45	- 9.10	0.28	31.604990	- 61382	8 15
	1	12 39 47.902	+20.011	+13 20 25.35	+ 6.05	0.28	31.543608	- 63326	8 0
	5	12 40 7.913	+18.310	+13 20 31.40	+ 21.18	0.28	31.480282	- 64973	7 45
	9	12 40 26.223	+16.533	+13 20 52.58	+ 36.17	0.28	31.415309	- 66306	7 29
	13	12 40 42.756	+14.696	+13 21 28.75	+ 50.92	0.28	31.349003	- 67317	7 14
FEB	17	12 40 57.452	+12.812	+13 22 19.67	+ 65.32	0.28	31.281686	- 68015	6 58
	21	12 41 10.264	+10.884	+13 23 24.99	+ 79.40	0.28	31.213671	- 68414	6 43
	25	12 41 21.148	+ 8.915	+13 24 44.39	+ 93.14	0.28	31.145257	- 68505	6 27
	29	12 41 30.063	+ 6.906	+13 26 17.53	+106.44	0.28	31.076752	- 68270	6 12

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DATE		RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H M S	S	° ' "	"	"	AU		H M
JAN	2	12 41 36.969	+ 4.871	+13 28 3.97	+119.15	0.28	31.008482	- 67693	5 56
	6	12 41 41.840	+ 2.826	+13 30 3.12	+131.17	0.28	30.940789	- 66769	5 40
	10	12 41 44.666	+ 0.787	+13 32 14.29	+142.35	0.28	30.874020	- 65507	5 25
	14	12 41 45.453	- 1.230	+13 34 36.64	+152.68	0.29	30.808513	- 63930	5 9
	18	12 41 44.223	- 3.218	+13 37 9.32	+162.16	0.29	30.744583	- 62062	4 53
	22	12 41 41.005	- 5.177	+13 39 51.48	+170.77	0.29	30.682521	- 59905	4 37
	26	12 41 35.828	- 7.100	+13 42 42.25	+178.44	0.29	30.622616	- 57451	4 22
	30	12 41 28.728	- 8.971	+13 45 40.69	+185.04	0.29	30.565165	- 54702	4 6
FEB	3	12 41 19.757	-10.773	+13 48 45.73	+190.48	0.29	30.510463	- 51666	3 50
	7	12 41 8.984	-12.492	+13 51 56.21	+194.69	0.29	30.458797	- 48369	3 34
	11	12 40 56.492	-14.109	+13 55 10.90	+197.69	0.29	30.410428	- 44846	3 18
	15	12 40 42.383	-15.627	+13 58 28.59	+199.53	0.29	30.365582	- 41130	3 2
	19	12 40 26.756	-17.042	+14 1 48.12	+200.24	0.29	30.324452	- 37233	2 46
	23	12 40 9.714	-18.349	+14 5 8.36	+199.77	0.29	30.287219	- 33157	2 30
	27	12 39 51.365	-19.537	+14 8 28.13	+198.07	0.29	30.254062	- 28913	2 14
MAR	3	12 39 31.828	-20.592	+14 11 46.20	+195.09	0.29	30.225149	- 24524	1 58
	7	12 39 11.236	-21.500	+14 15 1.29	+190.84	0.29	30.200625	- 20022	1 42
	11	12 38 49.736	-22.258	+14 18 12.13	+185.41	0.29	30.180603	- 15454	1 26
	15	12 38 27.478	-22.865	+14 21 17.54	+178.91	0.29	30.165149	- 10850	1 10
	19	12 38 4.613	-23.331	+14 24 16.45	+171.41	0.29	30.154299	- 6227	0 54
	23	12 37 41.282	-23.653	+14 27 7.86	+162.92	0.29	30.148072	- 1589	0 37
	27	12 37 17.629	-23.825	+14 29 50.78	+153.44	0.29	30.146483	+ 3048	0 21
	31	12 36 53.804	-23.841	+14 32 24.22	+142.97	0.29	30.149531	+ 7661	0 5
APR	4	12 36 29.963	-23.694	+14 34 47.19	+131.60	0.29	30.157192	+ 12213	23 45
	8	12 36 6.269	-23.389	+14 36 58.79	+119.44	0.29	30.169405	+ 16661	23 29
	12	12 35 42.880	-22.937	+14 38 58.23	+106.68	0.29	30.186066	+ 20979	23 13
	16	12 35 19.943	-22.350	+14 40 44.91	+ 93.39	0.29	30.207045	+ 25160	22 57
	20	12 34 57.593	-21.630	+14 42 18.30	+ 79.59	0.29	30.232205	+ 29201	22 41
	24	12 34 35.963	-20.781	+14 43 37.89	+ 65.32	0.29	30.261406	+ 33093	22 25
	28	12 34 15.182	-19.800	+14 44 43.21	+ 50.62	0.29	30.294499	+ 36813	22 8
MAY	2	12 33 55.382	-18.689	+14 45 33.83	+ 35.58	0.29	30.331312	+ 40334	21 52
	6	12 33 36.693	-17.457	+14 46 9.41	+ 20.35	0.29	30.371646	+ 43618	21 36
	10	12 33 19.236	-16.123	+14 46 29.76	+ 5.09	0.29	30.415264	+ 46652	21 20
	14	12 33 3.113	-14.701	+14 46 34.85	- 10.13	0.29	30.461916	+ 49443	21 4
	18	12 32 48.412	-13.196	+14 46 24.72	- 25.30	0.29	30.511359	+ 51992	20 48
	22	12 32 35.216	-11.615	+14 45 59.42	- 40.40	0.29	30.563351	+ 54299	20 32
	26	12 32 23.601	- 9.959	+14 45 19.02	- 55.37	0.29	30.617650	+ 56349	20 17
	30	12 32 13.642	- 8.230	+14 44 23.65	- 70.15	0.29	30.673999	+ 58122	20 1
JUNE	3	12 32 5.412	- 6.443	+14 43 13.50	- 84.59	0.29	30.732121	+ 59591	19 45
	7	12 31 58.969	- 4.618	+14 41 48.91	- 98.58	0.29	30.791712	+ 60757	19 29
	11	12 31 54.351	- 2.768	+14 40 10.33	-112.06	0.29	30.852469	+ 61638	19 13
	15	12 31 51.583	- 0.899	+14 38 18.27	-125.07	0.28	30.914107	+ 62243	18 57
	19	12 31 50.684	+ 0.986	+14 36 13.20	-137.59	0.28	30.976350	+ 62577	18 42
	23	12 31 51.670	+ 2.885	+14 33 55.61	-149.60	0.28	31.038927	+ 62634	18 26
	27	12 31 54.555	+ 4.793	+14 31 26.01	-161.06	0.28	31.101561	+ 62401	18 10

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H	M	S	S	O	I	''	''	''	AU		H M
JULY	1	12	31	59.348	+ 6.696	+14	28	44.95	-171.83	0.28	31.163962	+ 61861	17 55
	5	12	32	6.044	+ 8.577	+14	25	53.12	-181.81	0.28	31.225823	+ 61027	17 39
	9	12	32	14.621	+10.425	+14	22	51.31	-191.05	0.28	31.286850	+ 59922	17 23
	13	12	32	25.046	+12.237	+14	19	40.26	-199.54	0.28	31.346772	+ 58567	17 8
	17	12	32	37.283	+14.011	+14	16	20.72	-207.32	0.28	31.405339	+ 56965	16 52
AUG	21	12	32	51.294	+15.747	+14	12	53.40	-214.40	0.28	31.462304	+ 55122	16 37
	25	12	33	7.041	+17.441	+14	9	19.00	-220.70	0.28	31.517426	+ 53025	16 21
	29	12	33	24.482	+19.080	+14	5	38.30	-226.13	0.28	31.570451	+ 50668	16 6
	2	12	33	43.562	+20.650	+14	1	52.17	-230.66	0.28	31.621119	+ 48074	15 51
	6	12	34	4.212	+22.143	+13	58	1.51	-234.29	0.28	31.669193	+ 45270	15 35
	10	12	34	26.355	+23.558	+13	54	7.22	-237.10	0.28	31.714463	+ 42280	15 20
	14	12	34	49.913	+24.896	+13	50	10.12	-239.10	0.28	31.756743	+ 39114	15 5
	18	12	35	14.809	+26.159	+13	46	11.02	-240.31	0.28	31.795857	+ 35778	14 49
	22	12	35	40.968	+27.343	+13	42	10.71	-240.69	0.28	31.831635	+ 32264	14 34
	26	12	36	8.311	+28.438	+13	38	10.02	-240.13	0.28	31.863899	+ 28576	14 19
SEPT	30	12	36	36.749	+29.429	+13	34	9.89	-238.64	0.28	31.892475	+ 24740	14 3
	3	12	37	6.178	+30.313	+13	30	11.25	-238.26	0.28	31.917215	+ 20791	13 48
	7	12	37	36.491	+31.093	+13	26	14.99	-233.06	0.28	31.938006	+ 16753	13 33
	11	12	38	7.584	+31.770	+13	22	21.93	-229.06	0.28	31.954759	+ 12639	13 18
	15	12	38	39.354	+32.349	+13	18	32.87	-224.30	0.28	31.967398	+ 8457	13 3
OCT	19	12	39	11.703	+32.825	+13	14	48.57	-218.72	0.28	31.975855	+ 4203	12 47
	23	12	39	44.528	+33.188	+13	11	9.85	-212.29	0.27	31.980058	- 113	12 32
	27	12	40	17.716	+33.429	+13	7	37.56	-204.97	0.27	31.979945	- 4459	12 17
	1	12	40	51.145	+33.548	+13	4	12.59	-196.87	0.28	31.975486	- 8795	12 2
	5	12	41	24.693	+33.546	+13	0	55.72	-188.06	0.28	31.966691	- 13102	11 47
	9	12	41	58.239	+33.430	+12	57	47.66	-178.57	0.28	31.953589	- 17359	11 32
	13	12	42	31.669	+33.204	+12	54	49.09	-168.47	0.28	31.936230	- 21563	11 16
	17	12	43	4.873	+32.868	+12	52	0.62	-157.68	0.28	31.914667	- 25713	11 1
	21	12	43	37.741	+32.410	+12	49	22.94	-146.21	0.28	31.888954	- 29794	10 46
	25	12	44	10.151	+31.825	+12	46	56.73	-134.07	0.28	31.859160	- 33771	10 31
NOV	29	12	44	41.976	+31.117	+12	44	42.66	-121.37	0.28	31.825389	- 37606	10 16
	2	12	45	13.093	+30.292	+12	42	41.29	-108.20	0.28	31.787783	- 41278	10 0
	6	12	45	43.385	+29.356	+12	40	53.09	- 94.65	0.28	31.746505	- 44771	9 45
	10	12	46	12.741	+28.318	+12	39	18.44	- 80.73	0.28	31.701734	- 48084	9 30
	14	12	46	41.059	+27.179	+12	37	57.71	- 66.45	0.28	31.653650	- 51215	9 15
DEC	18	12	47	8.238	+25.931	+12	36	51.26	- 51.81	0.28	31.602435	- 54149	8 59
	22	12	47	34.169	+24.573	+12	35	59.45	- 36.87	0.28	31.548286	- 56851	8 44
	26	12	47	58.742	+23.112	+12	35	22.58	- 21.77	0.28	31.491435	- 59292	8 29
	30	12	48	21.854	+21.559	+12	35	0.81	- 6.62	0.28	31.432143	- 61451	8 13
	4	12	48	43.413	+19.926	+12	34	54.19	+ 8.49	0.28	31.370692	- 63324	7 58
	8	12	49	3.339	+18.224	+12	35	2.68	+ 23.51	0.28	31.307368	- 64913	7 43
	12	12	49	21.563	+16.454	+12	35	26.19	+ 38.42	0.28	31.242455	- 66225	7 27
	16	12	49	38.017	+14.615	+12	36	4.61	+ 53.21	0.28	31.176230	- 67248	7 12
	20	12	49	52.632	+12.710	+12	36	57.82	+ 67.77	0.28	31.108982	- 67953	6 56
	24	12	50	5.342	+10.752	+12	38	5.59	+ 81.96	0.28	31.041029	- 68322	6 41
	28	12	50	16.094	+ 8.757	+12	39	27.55	+ 95.64	0.28	30.972707	- 68349	6 25

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O ' "	"	"	AU		H M
JAN 1	12 50 24.851	+ 6.737	+12 41 3.19	+108.74	0.28	30.904358	- 68038	6 10
5	12 50 31.588	+ 4.708	+12 42 51.93	+121.19	0.29	30.836320	- 67404	5 54
9	12 50 36.296	+ 2.676	+12 44 53.12	+133.00	0.29	30.768916	- 66467	5 38
13	12 50 38.972	+ 0.640	+12 47 6.12	+144.14	0.29	30.702449	- 65220	5 23
17	12 50 39.612	- 1.394	+12 49 30.26	+154.48	0.29	30.637229	- 63649	5 7
21	12 50 38.218	- 3.406	+12 52 4.74	+163.92	0.29	30.573580	- 61750	4 51
25	12 50 34.812	- 5.381	+12 54 48.66	+172.33	0.29	30.511830	- 59530	4 35
29	12 50 29.431	- 7.302	+12 57 40.99	+179.65	0.29	30.452300	- 57012	4 20
FEB 2	12 50 22.129	- 9.156	+13 0 40.64	+185.87	0.29	30.395288	- 54222	4 4
6	12 50 12.973	-10.936	+13 3 46.51	+191.03	0.29	30.341066	- 51192	3 48
10	12 50 2.037	-12.647	+13 6 57.54	+195.13	0.29	30.289874	- 47925	3 32
14	12 49 49.390	-14.275	+13 10 12.67	+198.06	0.29	30.241949	- 44416	3 16
18	12 49 35.115	-15.806	+13 13 30.73	+199.76	0.29	30.197533	- 40678	3 0
22	12 49 19.309	-17.227	+13 16 50.49	+200.17	0.29	30.156855	- 36733	2 44
26	12 49 2.082	-18.521	+13 20 10.66	+199.30	0.29	30.120122	- 32611	2 28
MAR 2	12 48 43.561	-19.681	+13 23 29.96	+197.18	0.29	30.087511	- 28354	2 12
6	12 48 23.880	-20.707	+13 26 47.14	+193.93	0.29	30.059157	- 23993	1 56
10	12 48 3.173	-21.605	+13 30 1.07	+189.57	0.29	30.035164	- 19541	1 40
14	12 47 41.568	-22.368	+13 33 10.64	+184.06	0.29	30.015623	- 14998	1 24
18	12 47 19.200	-22.984	+13 36 14.70	+177.41	0.29	30.000625	- 10385	1 8
22	12 46 56.216	-23.447	+13 39 12.11	+169.61	0.29	29.990240	- 5728	0 52
26	12 46 32.769	-23.748	+13 42 1.72	+160.73	0.29	29.984512	- 1066	0 35
30	12 46 9.021	-23.887	+13 44 42.45	+150.89	0.29	29.983446	+ 3561	0 19
APR 3	12 45 45.134	-23.873	+13 47 13.34	+140.22	0.29	29.987007	+ 8122	0 3
7	12 45 21.261	-23.717	+13 49 33.56	+128.81	0.29	29.995129	+ 12613	23 43
11	12 44 57.544	-23.419	+13 51 42.37	+116.65	0.29	30.007742	+ 17028	23 27
15	12 44 34.125	-22.973	+13 53 39.02	+103.77	0.29	30.024770	+ 21350	23 11
19	12 44 11.152	-22.380	+13 55 22.79	+ 90.23	0.29	30.046120	+ 25555	22 55
23	12 43 48.772	-21.637	+13 56 53.02	+ 76.12	0.29	30.071675	+ 29607	22 39
27	12 43 27.135	-20.754	+13 58 9.14	+ 61.60	0.29	30.101282	+ 33470	22 23
MAY 1	12 43 6.381	-19.750	+13 59 10.74	+ 46.82	0.29	30.134752	+ 37129	22 7
5	12 42 46.631	-18.633	+13 59 57.56	+ 31.84	0.29	30.171881	+ 40584	21 50
9	12 42 27.998	-17.411	+14 0 29.40	+ 16.67	0.29	30.212465	+ 43837	21 34
13	12 42 10.587	-16.085	+14 0 46.07	+ 1.37	0.29	30.256302	+ 46880	21 18
17	12 41 54.502	-14.656	+14 0 47.44	- 14.03	0.29	30.303182	+ 49690	21 2
21	12 41 39.846	-13.129	+14 0 33.41	- 29.42	0.29	30.352872	+ 52244	20 46
25	12 41 26.717	-11.517	+14 0 3.99	- 44.64	0.29	30.405116	+ 54515	20 31
29	12 41 15.200	- 9.843	+13 59 19.35	- 59.58	0.29	30.459631	+ 56499	20 15
JUNE 2	12 41 5.357	- 8.115	+13 58 19.77	- 74.20	0.29	30.516130	+ 58212	19 59
6	12 40 57.242	- 6.343	+13 57 5.57	- 88.50	0.29	30.574342	+ 59660	19 43
10	12 40 50.899	- 4.526	+13 55 37.07	-102.48	0.29	30.634002	+ 60841	19 27
14	12 40 46.373	- 2.668	+13 53 54.59	-116.07	0.29	30.694843	+ 61744	19 11
18	12 40 43.705	- 0.777	+13 51 58.52	-129.20	0.29	30.756587	+ 62351	18 55
22	12 40 42.928	+ 1.134	+13 49 49.32	-141.75	0.29	30.818938	+ 62646	18 40
26	12 40 44.062	+ 3.044	+13 47 27.57	-153.63	0.28	30.881584	+ 62640	18 24
30	12 40 47.106	+ 4.946	+13 44 53.94	-164.83	0.28	30.944224	+ 62354	18 8

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	° ' "	"	"	AU		H M
JULY 4	12 40 52.052	+ 6.833	+13 42 9.11	-175.40	0.28	31.006578	+ 61805	17 53
8	12 40 58.885	+ 8.706	+13 39 13.71	-185.34	0.28	31.068383	+ 60992	17 37
12	12 41 7.591	+10.562	+13 36 8.37	-194.61	0.28	31.129375	+ 59913	17 22
16	12 41 18.153	+12.396	+13 32 53.76	-203.16	0.28	31.189288	+ 58556	17 6
20	12 41 30.549	+14.191	+13 29 30.60	-210.87	0.28	31.247844	+ 56916	16 51
24	12 41 44.740	+15.935	+13 25 59.73	-217.71	0.28	31.304760	+ 55010	16 35
28	12 42 0.675	+17.616	+13 22 22.02	-223.70	0.28	31.359770	+ 52871	16 20
AUG 1	12 42 18.291	+19.239	+13 18 38.32	-228.91	0.28	31.412641	+ 50515	16 4
5	12 42 37.530	+20.801	+13 14 49.41	-233.33	0.28	31.463156	+ 47948	15 49
9	12 42 58.331	+22.301	+13 10 56.08	-236.96	0.28	31.511104	+ 45170	15 33
13	12 43 20.632	+23.736	+13 6 59.12	-239.74	0.28	31.556274	+ 42177	15 18
17	12 43 44.368	+25.093	+13 2 59.38	-241.59	0.28	31.598451	+ 38971	15 3
21	12 44 9.461	+26.356	+12 58 57.79	-242.50	0.28	31.637422	+ 35575	14 47
25	12 44 35.817	+27.523	+12 54 55.29	-242.52	0.28	31.672997	+ 32030	14 32
29	12 45 3.340	+28.598	+12 50 52.77	-241.72	0.28	31.705027	+ 28351	14 17
SEPT 2	12 45 31.938	+29.580	+12 46 51.05	-240.10	0.28	31.733378	+ 24548	14 2
6	12 46 1.518	+30.472	+12 42 50.95	-237.67	0.28	31.757926	+ 20626	13 46
10	12 46 31.990	+31.268	+12 38 53.28	-234.38	0.28	31.778552	+ 16584	13 31
14	12 47 3.258	+31.957	+12 34 58.90	-230.19	0.28	31.795136	+ 12428	13 16
18	12 47 35.215	+32.528	+12 31 8.71	-225.07	0.28	31.807564	+ 8196	13 1
22	12 48 7.743	+32.982	+12 27 23.64	-219.14	0.28	31.815760	+ 3921	12 46
26	12 48 40.725	+33.321	+12 23 44.50	-212.44	0.28	31.819681	- 374	12 30
30	12 49 14.046	+33.550	+12 20 12.06	-205.01	0.28	31.819307	- 4677	12 15
OCT 4	12 49 47.596	+33.673	+12 16 47.05	-196.84	0.28	31.814630	- 8984	12 0
8	12 50 21.269	+33.682	+12 13 30.21	-187.94	0.28	31.805646	- 13293	11 45
12	12 50 54.951	+33.571	+12 10 22.27	-178.23	0.28	31.792353	- 17587	11 30
16	12 51 28.522	+33.331	+12 7 24.04	-167.77	0.28	31.774766	- 21829	11 14
20	12 52 1.853	+32.963	+12 4 36.27	-156.66	0.28	31.752937	- 25983	10 59
24	12 52 34.816	+32.479	+12 1 59.61	-144.97	0.28	31.726954	- 30028	10 44
28	12 53 7.295	+31.879	+11 59 34.64	-132.76	0.28	31.696926	- 33950	10 29
NOV 1	12 53 39.174	+31.171	+11 57 21.88	-120.05	0.28	31.662976	- 37748	10 14
5	12 54 10.345	+30.352	+11 55 21.83	-106.81	0.28	31.625228	- 41416	9 59
9	12 54 40.697	+29.415	+11 53 35.02	- 93.07	0.28	31.583812	- 44937	9 43
13	12 55 10.112	+28.355	+11 52 1.95	- 78.86	0.28	31.538875	- 48271	9 28
17	12 55 38.467	+27.181	+11 50 43.09	- 64.33	0.28	31.490604	- 51388	9 13
21	12 56 5.648	+25.904	+11 49 38.76	- 49.59	0.28	31.439216	- 54268	8 58
25	12 56 31.552	+24.530	+11 48 49.17	- 34.68	0.28	31.384948	- 56904	8 42
29	12 56 56.082	+23.070	+11 48 14.49	- 19.66	0.28	31.328044	- 59297	8 27
DEC 3	12 57 19.152	+21.523	+11 47 54.83	- 4.53	0.28	31.268747	- 61448	8 12
7	12 57 40.675	+19.883	+11 47 50.30	+ 10.68	0.28	31.207299	- 63339	7 56
11	12 58 0.558	+18.157	+11 48 0.98	+ 25.88	0.28	31.143960	- 64936	7 41
15	12 58 18.715	+16.352	+11 48 26.86	+ 40.90	0.28	31.079024	- 66216	7 25
19	12 58 35.067	+14.487	+11 49 7.76	+ 55.64	0.28	31.012808	- 67172	7 10
23	12 58 49.554	+12.573	+11 50 3.40	+ 70.03	0.28	30.945636	- 67805	6 54
27	12 59 2.127	+10.620	+11 51 13.43	+ 83.99	0.28	30.877831	- 68127	6 39
31	12 59 12.747	+ 8.632	+11 52 37.42	+ 97.54	0.29	30.809704	- 68145	6 23

ASTROMETRIC POSITIONS OF PLUTO 1970-1990 FOR OH ET

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O . "	"	"	AU		H M
JAN 4	12 59 21.379	+ 6.609	+11 54 14.96	+110.64	0.29	30.741559	- 67850	6 8
8	12 59 27.988	+ 4.559	+11 56 5.60	+123.13	0.29	30.673709	- 67218	5 52
12	12 59 32.547	+ 2.498	+11 58 8.73	+134.90	0.29	30.606491	- 66242	5 36
16	12 59 35.045	+ 0.444	+12 0 23.63	+145.83	0.29	30.540249	- 64927	5 21
20	12 59 35.489	- 1.588	+12 2 49.46	+155.85	0.29	30.475322	- 63290	5 5
24	12 59 33.901	- 3.586	+12 5 25.31	+164.96	0.29	30.412032	- 61353	4 49
28	12 59 30.315	- 5.544	+12 8 10.27	+173.13	0.29	30.350679	- 59140	4 34
FEB 1	12 59 24.771	- 7.464	+12 11 3.40	+180.37	0.29	30.291539	- 56645	4 18
5	12 59 17.307	- 9.333	+12 14 3.77	+186.55	0.29	30.234894	- 53862	4 2
9	12 59 7.974	-11.134	+12 17 10.32	+191.54	0.29	30.181032	- 50798	3 46
13	12 58 56.840	-12.848	+12 20 21.86	+195.32	0.29	30.130234	- 47472	3 30
17	12 58 43.992	-14.464	+12 23 37.18	+197.86	0.29	30.082762	- 43916	3 14
21	12 58 29.528	-15.969	+12 26 55.04	+199.18	0.29	30.038846	- 40163	2 58
25	12 58 13.559	-17.366	+12 30 14.22	+199.35	0.29	29.998683	- 36244	2 42
MAR 1	12 57 56.193	-18.654	+12 33 33.57	+198.37	0.29	29.962439	- 32163	2 26
5	12 57 37.539	-19.824	+12 36 51.94	+196.18	0.29	29.930276	- 27922	2 10
9	12 57 17.715	-20.861	+12 40 8.12	+192.73	0.29	29.902354	- 23538	1 54
13	12 56 56.854	-21.754	+12 43 20.85	+188.03	0.29	29.878816	- 19044	1 38
17	12 56 35.100	-22.494	+12 46 28.88	+182.15	0.29	29.859772	- 14475	1 22
21	12 56 12.606	-23.079	+12 49 31.03	+175.15	0.29	29.845297	- 9872	1 6
25	12 55 49.527	-23.515	+12 52 26.18	+167.17	0.29	29.835425	- 5263	0 50
29	12 55 26.012	-23.808	+12 55 13.35	+158.25	0.29	29.830162	- 655	0 34
APR 2	12 55 2.204	-23.957	+12 57 51.60	+148.37	0.29	29.829507	+ 3948	0 17
6	12 54 38.247	-23.949	+13 0 19.97	+137.56	0.29	29.833455	+ 8525	0 1
10	12 54 14.298	-23.783	+13 2 37.53	+125.85	0.29	29.841980	+ 13044	23 41
14	12 53 50.515	-23.458	+13 4 43.38	+113.38	0.29	29.855024	+ 17467	23 25
18	12 53 27.057	-22.980	+13 6 36.76	+100.28	0.29	29.872491	+ 21762	23 9
22	12 53 4.077	-22.362	+13 8 17.04	+ 86.66	0.29	29.894253	+ 25904	22 53
26	12 52 41.715	-21.617	+13 9 43.70	+ 72.61	0.29	29.920157	+ 29897	22 37
30	12 52 20.098	-20.745	+13 10 56.31	+ 58.13	0.29	29.950054	+ 33739	22 21
MAY 4	12 51 59.353	-19.746	+13 11 54.44	+ 43.26	0.29	29.983793	+ 37411	22 5
8	12 51 39.607	-18.618	+13 12 37.70	+ 28.07	0.29	30.021204	+ 40888	21 49
12	12 51 20.989	-17.369	+13 13 5.77	+ 12.70	0.29	30.062092	+ 44142	21 33
16	12 51 3.620	-16.013	+13 13 18.47	- 2.72	0.29	30.106234	+ 47146	21 16
20	12 50 47.607	-14.567	+13 13 15.75	- 18.06	0.29	30.153380	+ 49891	21 1
24	12 50 33.040	-13.042	+13 12 57.69	- 33.30	0.29	30.203271	+ 52389	20 45
28	12 50 19.998	-11.446	+13 12 24.39	- 48.42	0.29	30.255660	+ 54646	20 29
JUNE 1	12 50 8.552	- 9.775	+13 11 35.97	- 63.39	0.29	30.310306	+ 56650	20 13
5	12 49 58.777	- 8.037	+13 10 32.58	- 78.13	0.29	30.366956	+ 58385	19 57
9	12 49 50.740	- 6.239	+13 9 14.45	- 92.55	0.29	30.425341	+ 59829	19 41
13	12 49 44.501	- 4.396	+13 7 41.90	-106.53	0.29	30.485170	+ 60968	19 25
17	12 49 40.105	- 2.528	+13 5 55.37	-119.97	0.29	30.546138	+ 61806	19 9
21	12 49 37.577	- 0.645	+13 3 55.40	-132.88	0.29	30.607944	+ 62367	18 54
25	12 49 36.932	+ 1.251	+13 1 42.52	-145.26	0.29	30.670311	+ 62659	18 38
29	12 49 38.183	+ 3.156	+12 59 17.26	-157.12	0.29	30.732970	+ 62679	18 22

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O ' "	"	"	AU		H M
JULY 3	12 49 41.339	+ 5.070	+12 56 40.14	-168.39	0.29	30.795649	+ 62417	18 6
7	12 49 46.409	+ 6.982	+12 53 51.75	-179.00	0.28	30.858066	+ 61861	17 51
11	12 49 53.391	+ 8.876	+12 50 52.75	-188.85	0.28	30.919927	+ 61003	17 35
15	12 50 2.267	+10.738	+12 47 43.90	-197.88	0.28	30.980930	+ 59865	17 20
19	12 50 13.005	+12.557	+12 44 26.02	-206.14	0.28	31.040795	+ 58470	17 4
23	12 50 25.562	+14.338	+12 40 59.88	-213.67	0.28	31.099265	+ 56837	16 49
27	12 50 39.900	+16.077	+12 37 26.21	-220.45	0.28	31.156102	+ 54962	16 33
31	12 50 55.977	+17.772	+12 33 45.76	-226.45	0.28	31.211064	+ 52846	16 18
AUG 4	12 51 13.749	+19.417	+12 29 59.31	-231.62	0.28	31.263910	+ 50479	16 2
8	12 51 33.166	+20.996	+12 26 7.69	-235.88	0.28	31.314389	+ 47866	15 47
12	12 51 54.162	+22.496	+12 22 11.81	-239.22	0.28	31.362255	+ 45032	15 31
16	12 52 16.658	+23.914	+12 18 12.59	-241.67	0.28	31.407287	+ 42011	15 16
20	12 52 40.572	+25.252	+12 14 10.92	-243.31	0.28	31.449298	+ 38818	15 1
24	12 53 5.824	+26.513	+12 10 7.61	-244.14	0.28	31.488116	+ 35458	14 45
28	12 53 32.337	+27.692	+12 6 3.47	-244.12	0.28	31.523574	+ 31933	14 30
SEPT 1	12 54 0.029	+28.785	+12 1 59.35	-243.23	0.28	31.555507	+ 28240	14 15
5	12 54 28.814	+29.780	+11 57 56.12	-241.40	0.28	31.583747	+ 24391	14 0
9	12 54 58.594	+30.664	+11 53 54.72	-238.62	0.28	31.608138	+ 20418	13 44
13	12 55 29.258	+31.438	+11 49 56.10	-235.01	0.28	31.628556	+ 16356	13 29
17	12 56 0.696	+32.106	+11 46 1.09	-230.60	0.28	31.644912	+ 12225	13 14
21	12 56 32.802	+32.672	+11 42 10.49	-225.39	0.28	31.657137	+ 8031	12 59
25	12 57 5.474	+33.134	+11 38 25.10	-219.41	0.28	31.665168	+ 3776	12 44
29	12 57 38.608	+33.487	+11 34 45.69	-212.59	0.28	31.668944	- 531	12 28
OCT 3	12 58 12.095	+33.722	+11 31 13.10	-204.91	0.28	31.668413	- 4880	12 13
7	12 58 45.817	+33.828	+11 27 48.19	-196.41	0.28	31.663533	- 9229	11 58
11	12 59 19.645	+33.809	+11 24 31.78	-187.19	0.28	31.654304	- 13541	11 43
15	12 59 53.454	+33.672	+11 21 24.59	-177.30	0.28	31.640763	- 17799	11 28
19	13 0 27.126	+33.424	+11 18 27.29	-166.79	0.28	31.622964	- 21996	11 13
23	13 1 0.550	+33.062	+11 15 40.50	-155.64	0.28	31.600968	- 26124	10 57
27	13 1 33.612	+32.583	+11 13 4.86	-143.85	0.28	31.574844	- 30179	10 42
31	13 2 6.195	+31.982	+11 10 41.01	-131.42	0.28	31.544665	- 34137	10 27
NOV 4	13 2 38.177	+31.249	+11 8 29.59	-118.41	0.28	31.510528	- 37962	10 12
8	13 3 9.426	+30.397	+11 6 31.18	-104.94	0.28	31.472566	- 41616	9 57
12	13 3 39.823	+29.431	+11 4 46.24	- 91.09	0.28	31.430950	- 45085	9 41
16	13 4 9.254	+28.361	+11 3 15.15	- 76.91	0.28	31.385865	- 48363	9 26
20	13 4 37.615	+27.189	+11 1 58.24	- 62.44	0.28	31.337502	- 51445	9 11
24	13 5 4.804	+25.915	+11 0 55.80	- 47.65	0.28	31.286057	- 54329	8 56
28	13 5 30.719	+24.533	+11 0 8.15	- 32.60	0.28	31.231728	- 56990	8 40
DEC 2	13 5 55.252	+23.044	+10 59 35.55	- 17.39	0.28	31.174738	- 59393	8 25
6	13 6 18.296	+21.460	+10 59 18.16	- 2.14	0.28	31.115345	- 61512	8 10
10	13 6 39.756	+19.795	+10 59 16.02	+ 13.03	0.28	31.053833	- 63335	7 54
14	13 6 59.551	+18.059	+10 59 29.05	+ 28.06	0.28	30.990498	- 64866	7 39
18	13 7 17.610	+16.261	+10 59 57.11	+ 42.93	0.28	30.925632	- 66109	7 24
22	13 7 33.871	+14.399	+11 0 40.04	+ 57.58	0.28	30.859523	- 67064	7 8
26	13 7 48.270	+12.475	+11 1 37.62	+ 72.01	0.29	30.792459	- 67716	6 53
30	13 8 0.745	+10.495	+11 2 49.63	+ 86.03	0.29	30.724743	- 68035	6 37

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O I II	II	II	AU	H M	
JAN 3	13 8 11.240	+ 8.475	+11 4 15.66	+ 99.55	0.29	30.656708	- 68009	6 21
7	13 8 19.715	+ 6.434	+11 5 55.21	+112.44	0.29	30.588699	- 67641	6 6
11	13 8 26.149	+ 4.384	+11 7 47.65	+124.63	0.29	30.521058	- 66944	5 50
15	13 8 30.533	+ 2.335	+11 9 52.28	+136.12	0.29	30.454114	- 65937	5 35
19	13 8 32.868	+ 0.291	+11 12 8.40	+146.87	0.29	30.388177	- 64628	5 19
23	13 8 33.159	- 1.746	+11 14 35.27	+156.83	0.29	30.323549	- 63011	5 3
27	13 8 31.413	- 3.765	+11 17 12.10	+165.87	0.29	30.260538	- 61073	4 47
31	13 8 27.648	- 5.747	+11 19 57.97	+173.90	0.29	30.199465	- 58814	4 32
FEB 4	13 8 21.901	- 7.672	+11 22 51.87	+180.80	0.29	30.140651	- 56254	4 16
8	13 8 14.229	- 9.528	+11 25 52.67	+186.59	0.29	30.084397	- 53421	4 0
12	13 8 4.701	-11.306	+11 28 59.26	+191.24	0.29	30.030976	- 50342	3 44
16	13 7 53.395	-13.003	+11 32 10.50	+194.80	0.29	29.980634	- 47041	3 28
20	13 7 40.392	-14.618	+11 35 25.30	+197.24	0.29	29.933593	- 43517	3 12
24	13 7 25.774	-16.139	+11 38 42.54	+198.47	0.29	29.890076	- 39770	2 56
28	13 7 9.635	-17.547	+11 42 1.01	+198.41	0.29	29.850306	- 35815	2 40
MAR 3	13 6 52.088	-18.830	+11 45 19.42	+197.07	0.29	29.814491	- 31685	2 24
7	13 6 33.258	-19.975	+11 48 36.49	+194.49	0.30	29.782806	- 27416	2 8
11	13 6 13.283	-20.983	+11 51 50.98	+190.73	0.30	29.755390	- 23042	1 52
15	13 5 52.300	-21.853	+11 55 1.71	+185.86	0.30	29.732348	- 18593	1 36
19	13 5 30.447	-22.589	+11 58 7.57	+179.92	0.30	29.713755	- 14070	1 20
23	13 5 7.858	-23.186	+12 1 7.49	+172.86	0.30	29.699685	- 9479	1 4
27	13 4 44.672	-23.627	+12 4 0.35	+164.69	0.30	29.690206	- 4846	0 48
31	13 4 21.045	-23.907	+12 6 45.04	+155.45	0.30	29.685360	- 204	0 32
APR 4	13 3 57.138	-24.026	+12 9 20.49	+145.26	0.30	29.685156	+ 4406	0 16
8	13 3 33.112	-23.987	+12 11 45.75	+134.23	0.30	29.689562	+ 8954	23 55
12	13 3 9.125	-23.799	+12 13 59.98	+122.47	0.30	29.698516	+ 13412	23 39
16	13 2 45.326	-23.473	+12 16 2.45	+110.04	0.30	29.711928	+ 17784	23 23
20	13 2 21.853	-23.006	+12 17 52.49	+ 96.94	0.30	29.729712	+ 22064	23 7
24	13 1 58.847	-22.392	+12 19 29.43	+ 83.20	0.30	29.751776	+ 26229	22 51
28	13 1 36.455	-21.631	+12 20 52.63	+ 68.92	0.30	29.778005	+ 30244	22 35
MAY 2	13 1 14.824	-20.729	+12 22 1.55	+ 54.24	0.30	29.808249	+ 34082	22 19
6	13 0 54.095	-19.700	+12 22 55.79	+ 39.27	0.29	29.842331	+ 37713	22 3
10	13 0 34.395	-18.556	+12 23 35.06	+ 24.16	0.29	29.880044	+ 41127	21 47
14	13 0 15.839	-17.313	+12 23 59.22	+ 8.92	0.29	29.921171	+ 44329	21 31
18	12 59 58.526	-15.969	+12 24 8.14	- 6.43	0.29	29.965500	+ 47327	21 15
22	12 59 42.557	-14.525	+12 24 1.71	- 21.83	0.29	30.012827	+ 50096	20 59
26	12 59 28.032	-12.986	+12 23 39.88	- 37.20	0.29	30.062923	+ 52616	20 43
30	12 59 15.046	-11.359	+12 23 2.68	- 52.42	0.29	30.115539	+ 54863	20 27
JUNE 3	12 59 3.687	- 9.665	+12 22 10.26	- 67.37	0.29	30.170402	+ 56822	20 11
7	12 58 54.022	- 7.917	+12 21 2.89	- 81.95	0.29	30.227224	+ 58494	19 55
11	12 58 46.105	- 6.128	+12 19 40.94	- 96.17	0.29	30.285718	+ 59897	19 39
15	12 58 39.977	- 4.301	+12 18 4.77	-110.01	0.29	30.345615	+ 61039	19 23
19	12 58 35.676	- 2.433	+12 16 14.76	-123.46	0.29	30.406654	+ 61909	19 7
23	12 58 33.243	- 0.533	+12 14 11.30	-136.44	0.29	30.468563	+ 62490	18 52
27	12 58 32.710	+ 1.387	+12 11 54.86	-148.84	0.29	30.531053	+ 62769	18 36

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H	M	S	S	O	'	"	"	"	AU		H M
JULY	1	12	58	34.097	+ 3.315	+12	9	26.02	-160.58	0.29	30.593822	+ 62742	18 20
	5	12	58	37.412	+ 5.232	+12	6	45.44	-171.63	0.29	30.656564	+ 62422	18 5
	9	12	58	42.644	+ 7.129	+12	3	53.81	-181.97	0.29	30.718986	+ 61833	17 49
	13	12	58	49.773	+ 9.009	+12	0	51.84	-191.66	0.29	30.780819	+ 60991	17 33
	17	12	58	58.782	+10.872	+11	57	40.18	-200.67	0.29	30.841810	+ 59886	17 18
	21	12	59	9.654	+12.708	+11	54	19.51	-208.94	0.28	30.901696	+ 58510	17 2
	25	12	59	22.362	+14.513	+11	50	50.57	-216.41	0.28	30.960206	+ 56860	16 47
	29	12	59	36.875	+16.268	+11	47	14.16	-223.02	0.28	31.017066	+ 54937	16 31
AUG	2	12	59	53.143	+17.962	+11	43	31.14	-228.74	0.28	31.072003	+ 52766	16 16
	6	13	0	11.105	+19.589	+11	39	42.40	-233.61	0.28	31.124769	+ 50377	16 0
	10	13	0	30.694	+21.153	+11	35	48.79	-237.69	0.28	31.175146	+ 47784	15 45
	14	13	0	51.847	+22.654	+11	31	51.10	-240.97	0.28	31.222930	+ 44985	15 30
	18	13	1	14.501	+24.089	+11	27	50.13	-243.40	0.28	31.267915	+ 41980	15 14
	22	13	1	38.590	+25.448	+11	23	46.73	-244.93	0.28	31.309895	+ 38766	14 59
	26	13	2	4.038	+26.719	+11	19	41.80	-245.53	0.28	31.348661	+ 35355	14 44
	30	13	2	30.757	+27.891	+11	15	36.27	-245.20	0.28	31.384016	+ 31780	14 28
SEPT	3	13	2	58.648	+28.962	+11	11	31.07	-243.99	0.28	31.415796	+ 28074	14 13
	7	13	3	27.610	+29.939	+11	7	27.08	-241.98	0.28	31.443870	+ 24250	13 58
	11	13	3	57.549	+30.823	+11	3	25.10	-239.14	0.28	31.468120	+ 20314	13 43
	15	13	4	28.372	+31.611	+10	59	25.96	-235.47	0.28	31.488434	+ 16265	13 27
	19	13	4	59.983	+32.295	+10	55	30.49	-230.92	0.28	31.504699	+ 12110	13 12
	23	13	5	32.278	+32.864	+10	51	39.57	-225.47	0.28	31.516809	+ 7866	12 57
OCT	27	13	6	5.142	+33.310	+10	47	54.10	-219.15	0.28	31.524675	+ 3571	12 42
	1	13	6	38.452	+33.637	+10	44	14.95	-212.04	0.28	31.528246	- 741	12 27
	5	13	7	12.089	+33.849	+10	40	42.91	-204.21	0.28	31.527505	- 5054	12 11
	9	13	7	45.938	+33.953	+10	37	18.70	-195.66	0.28	31.522451	- 9361	11 56
	13	13	8	19.891	+33.943	+10	34	3.04	-186.39	0.28	31.513090	- 13661	11 41
	17	13	8	53.834	+33.816	+10	30	56.65	-176.38	0.28	31.499429	- 17941	11 26
	21	13	9	27.650	+33.562	+10	28	0.27	-165.63	0.28	31.481488	- 22179	11 11
	25	13	10	1.212	+33.176	+10	25	14.64	-154.18	0.28	31.459309	- 26338	10 56
	29	13	10	34.388	+32.664	+10	22	40.46	-142.17	0.28	31.432971	- 30378	10 40
NOV	2	13	11	7.052	+32.038	+10	20	18.29	-129.66	0.28	31.402593	- 34287	10 25
	6	13	11	39.090	+31.301	+10	18	8.63	-116.67	0.28	31.368306	- 38064	10 10
	10	13	12	10.391	+30.452	+10	16	11.96	-103.20	0.28	31.330242	- 41699	9 55
	14	13	12	40.843	+29.490	+10	14	28.76	- 89.28	0.28	31.288543	- 45183	9 40
	18	13	13	10.333	+28.408	+10	12	59.48	- 74.94	0.28	31.243360	- 48492	9 24
	22	13	13	38.741	+27.206	+10	11	44.54	- 60.26	0.28	31.194868	- 51588	9 9
	26	13	14	5.947	+25.895	+10	10	44.28	- 45.36	0.28	31.143280	- 54437	8 54
DEC	30	13	14	31.842	+24.489	+10	9	58.92	- 30.35	0.28	31.088843	- 57035	8 39
	4	13	14	56.331	+22.995	+10	9	28.57	- 15.27	0.28	31.031808	- 59382	8 23
	8	13	15	19.326	+21.415	+10	9	13.30	- 0.14	0.28	30.972426	- 61475	8 8
	12	13	15	40.741	+19.751	+10	9	13.16	+ 15.00	0.28	30.910951	- 63308	7 53
	16	13	16	0.492	+18.001	+10	9	28.16	+ 30.10	0.29	30.847643	- 64860	7 37
	20	13	16	18.493	+16.171	+10	9	58.26	+ 45.04	0.29	30.782783	- 66100	7 22
	24	13	16	34.664	+14.275	+10	10	43.30	+ 59.66	0.29	30.716683	- 67008	7 6
	28	13	16	48.939	+12.332	+10	11	42.96	+ 73.89	0.29	30.649675	- 67586	6 51

ASTROMETRIC POSITIONS OF PLUTO 1970-1990 FOR OH ET

--- 1977 ---

DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	° ' "	"	"	AU		H M
JAN 1	13 17 1.271	+10.353	+10 12 56.85	+ 87.65	0.29	30.582089	- 67847	6 35
5	13 17 11.624	+ 8.343	+10 14 24.50	+100.93	0.29	30.514242	- 67797	6 20
9	13 17 19.967	+ 6.306	+10 16 5.43	+113.68	0.29	30.446445	- 67439	6 4
13	13 17 26.273	+ 4.244	+10 17 59.11	+125.84	0.29	30.379006	- 66763	5 48
17	13 17 30.517	+ 2.168	+10 20 4.95	+137.27	0.29	30.312243	- 65745	5 33
21	13 17 32.685	+ 0.099	+10 22 22.22	+147.84	0.29	30.246498	- 64384	5 17
25	13 17 32.784	- 1.946	+10 24 50.06	+157.49	0.29	30.182114	- 62698	5 1
FEB 29	13 17 30.838	- 3.953	+10 27 27.55	+166.17	0.29	30.119416	- 60711	4 46
2	13 17 26.885	- 5.916	+10 30 13.72	+173.87	0.29	30.058705	- 58441	4 30
6	13 17 20.969	- 7.830	+10 33 7.59	+180.60	0.29	30.000264	- 55904	4 14
10	13 17 13.139	- 9.693	+10 36 8.19	+186.27	0.29	29.944360	- 53096	3 58
14	13 17 3.446	-11.490	+10 39 14.46	+190.82	0.29	29.891264	- 50013	3 42
18	13 16 51.956	-13.201	+10 42 25.28	+194.13	0.29	29.841251	- 46665	3 26
22	13 16 38.755	-14.810	+10 45 39.41	+196.20	0.30	29.794586	- 43086	3 10
26	13 16 23.945	-16.308	+10 48 55.61	+197.04	0.30	29.751500	- 39310	2 54
MAR 2	13 16 7.637	-17.689	+10 52 12.65	+196.69	0.30	29.712190	- 35366	2 38
6	13 15 49.948	-18.954	+10 55 29.34	+195.18	0.30	29.676824	- 31276	2 22
10	13 15 30.994	-20.103	+10 58 44.52	+192.53	0.30	29.645548	- 27044	2 6
14	13 15 10.891	-21.123	+11 1 57.05	+188.67	0.30	29.618504	- 22672	1 50
18	13 14 49.768	-21.999	+11 5 5.72	+183.57	0.30	29.595832	- 18187	1 34
22	13 14 27.769	-22.720	+11 8 9.29	+177.30	0.30	29.577645	- 13626	1 18
26	13 14 5.049	-23.286	+11 11 6.59	+169.92	0.30	29.564019	- 9029	1 2
APR 30	13 13 41.763	-23.696	+11 13 56.51	+161.54	0.30	29.554990	- 4425	0 46
3	13 13 18.067	-23.959	+11 16 38.05	+152.25	0.30	29.550565	+ 161	0 30
7	13 12 54.108	-24.081	+11 19 10.30	+142.07	0.30	29.550726	+ 4728	0 14
11	13 12 30.027	-24.052	+11 21 32.37	+131.01	0.30	29.555454	+ 9270	23 54
15	13 12 5.975	-23.865	+11 23 43.38	+119.09	0.30	29.564724	+ 13759	23 37
19	13 11 42.110	-23.520	+11 25 42.47	+106.42	0.30	29.578483	+ 18156	23 21
23	13 11 18.590	-23.020	+11 27 28.89	+ 93.11	0.30	29.596639	+ 22429	23 5
27	13 10 55.570	-22.377	+11 29 2.00	+ 79.30	0.30	29.619068	+ 26550	22 49
MAY 1	13 10 33.193	-21.603	+11 30 21.30	+ 65.09	0.30	29.645618	+ 30504	22 33
5	13 10 11.590	-20.708	+11 31 26.39	+ 50.52	0.30	29.676122	+ 34300	22 17
9	13 9 50.882	-19.690	+11 32 16.91	+ 35.59	0.30	29.710422	+ 37931	22 1
13	13 9 31.192	-18.546	+11 32 52.50	+ 20.40	0.30	29.748353	+ 41375	21 45
17	13 9 12.646	-17.281	+11 33 12.90	+ 5.02	0.30	29.789728	+ 44598	21 29
21	13 8 55.365	-15.907	+11 33 17.92	- 10.42	0.29	29.834326	+ 47580	21 13
25	13 8 39.458	-14.438	+11 33 7.50	- 25.78	0.29	29.881906	+ 50301	20 57
29	13 8 25.020	-12.891	+11 32 41.72	- 40.99	0.29	29.932207	+ 52762	20 41
JUNE 2	13 8 12.129	-11.277	+11 32 0.73	- 56.02	0.29	29.984969	+ 54974	20 25
6	13 8 0.852	- 9.594	+11 31 4.71	- 70.86	0.29	30.039943	+ 56943	20 9
10	13 7 51.258	- 7.843	+11 29 53.85	- 85.47	0.29	30.096886	+ 58649	19 53
14	13 7 43.415	- 6.034	+11 28 28.38	- 99.75	0.29	30.155535	+ 60070	19 37
18	13 7 37.381	- 4.178	+11 26 48.63	-113.59	0.29	30.215605	+ 61193	19 21
22	13 7 33.203	- 2.292	+11 24 55.04	-126.92	0.29	30.276798	+ 62014	19 6
26	13 7 30.911	- 0.389	+11 22 48.12	-139.66	0.29	30.338812	+ 62539	18 50
30	13 7 30.522	+ 1.517	+11 20 28.46	-151.82	0.29	30.401351	+ 62794	18 34

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O ' "	"	"	AU		H M
JULY 4	13 7 32.039	+ 3.432	+11 17 56.64	-163.43	0.29	30.464145	+ 62786	18 18
8	13 7 35.471	+ 5.353	+11 15 13.21	-174.46	0.29	30.526931	+ 62502	18 3
12	13 7 40.824	+ 7.273	+11 12 18.75	-184.81	0.29	30.589433	+ 61930	17 47
16	13 7 48.097	+ 9.178	+11 9 13.94	-194.43	0.29	30.651363	+ 61063	17 32
20	13 7 57.275	+11.054	+11 5 59.51	-203.25	0.29	30.712426	+ 59906	17 16
24	13 8 8.329	+12.889	+11 2 36.26	-211.24	0.29	30.772332	+ 58482	17 0
28	13 8 21.218	+14.676	+10 59 5.02	-218.44	0.29	30.830814	+ 56814	16 45
AUG 1	13 8 35.894	+16.419	+10 55 26.58	-224.89	0.28	30.887628	+ 54916	16 29
5	13 8 52.313	+18.119	+10 51 41.69	-230.57	0.28	30.942544	+ 52782	16 14
9	13 9 10.432	+19.766	+10 47 51.12	-235.41	0.28	30.995326	+ 50403	15 59
13	13 9 30.198	+21.353	+10 43 55.71	-239.37	0.28	31.045729	+ 47780	15 43
17	13 9 51.551	+22.863	+10 39 56.34	-242.40	0.28	31.093509	+ 44930	15 28
21	13 10 14.414	+24.288	+10 35 53.94	-244.53	0.28	31.138439	+ 41877	15 12
25	13 10 38.702	+25.628	+10 31 49.41	-245.78	0.28	31.180316	+ 38654	14 57
29	13 11 4.330	+26.885	+10 27 43.63	-246.22	0.28	31.218970	+ 35274	14 42
SEPT 2	13 11 31.215	+28.061	+10 23 37.41	-245.83	0.28	31.254244	+ 31733	14 27
6	13 11 59.276	+29.152	+10 19 31.58	-244.56	0.28	31.285977	+ 28031	14 11
10	13 12 28.428	+30.144	+10 15 27.02	-242.40	0.28	31.314008	+ 24176	13 56
14	13 12 58.572	+31.031	+10 11 24.62	-239.29	0.28	31.338184	+ 20186	13 41
18	13 13 29.603	+31.802	+10 7 25.33	-235.31	0.28	31.358370	+ 16098	13 26
22	13 14 1.405	+32.460	+10 3 30.02	-230.50	0.28	31.374468	+ 11942	13 10
26	13 14 33.865	+33.014	+ 9 59 39.52	-224.90	0.28	31.386410	+ 7735	12 55
30	13 15 6.879	+33.462	+ 9 55 54.62	-218.54	0.28	31.394145	+ 3474	12 40
OCT 4	13 15 40.341	+33.801	+ 9 52 16.08	-211.36	0.28	31.397619	- 835	12 25
8	13 16 14.142	+34.024	+ 9 48 44.72	-203.39	0.28	31.396784	- 5178	12 10
12	13 16 48.166	+34.120	+ 9 45 21.33	-194.60	0.28	31.391606	- 9535	11 55
16	13 17 22.286	+34.087	+ 9 42 6.73	-185.03	0.28	31.382071	- 13862	11 39
20	13 17 56.373	+33.927	+ 9 39 1.70	-174.81	0.28	31.368209	- 18129	11 24
24	13 18 30.300	+33.654	+ 9 36 6.89	-163.97	0.28	31.350080	- 22320	11 9
28	13 19 3.954	+33.268	+ 9 33 22.92	-152.55	0.28	31.327760	- 26438	10 54
NOV 1	13 19 37.222	+32.763	+ 9 30 50.37	-140.52	0.28	31.301322	- 30473	10 39
5	13 20 9.985	+32.139	+ 9 28 29.85	-127.90	0.28	31.270849	- 34408	10 24
9	13 20 42.124	+31.387	+ 9 26 21.95	-114.71	0.28	31.236441	- 38222	10 8
13	13 21 13.511	+30.507	+ 9 24 27.24	-101.05	0.28	31.198219	- 41869	9 53
17	13 21 44.018	+29.510	+ 9 22 46.19	- 87.03	0.28	31.156350	- 45321	9 38
21	13 22 13.528	+28.407	+ 9 21 19.16	- 72.70	0.28	31.111029	- 48571	9 23
25	13 22 41.935	+27.202	+ 9 20 6.46	- 58.14	0.28	31.062458	- 51617	9 7
29	13 23 9.137	+25.897	+ 9 19 8.32	- 43.31	0.28	31.010841	- 54457	8 52
DEC 3	13 23 35.034	+24.488	+ 9 18 25.01	- 28.30	0.28	30.956384	- 57073	8 37
7	13 23 59.522	+22.974	+ 9 17 56.71	- 13.13	0.28	30.899311	- 59444	8 22
11	13 24 22.496	+21.361	+ 9 17 43.58	+ 2.08	0.29	30.839867	- 61533	8 6
15	13 24 43.857	+19.663	+ 9 17 45.66	+ 17.20	0.29	30.778334	- 63317	7 51
19	13 25 3.520	+17.895	+ 9 18 2.86	+ 32.11	0.29	30.715017	- 64799	7 35
23	13 25 21.415	+16.066	+ 9 18 34.97	+ 46.81	0.29	30.650218	- 65988	7 20
27	13 25 37.481	+14.177	+ 9 19 21.78	+ 61.25	0.29	30.584230	- 66881	7 4
31	13 25 51.658	+12.233	+ 9 20 23.03	+ 75.37	0.29	30.517349	- 67476	6 49

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DATE		RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H M S	S	O I "	"	"	AU		H M
JAN	4	13 26 3.891	+10.236	+ 9 21 38.40	+ 89.11	0.29	30.449873	- 67754	6 33
	8	13 26 14.127	+ 8.194	+ 9 23 7.51	+102.34	0.29	30.382119	- 67690	6 18
	12	13 26 22.321	+ 6.130	+ 9 24 49.85	+114.91	0.29	30.314429	- 67275	6 2
	16	13 26 28.451	+ 4.060	+ 9 26 44.76	+126.76	0.29	30.247154	- 66527	5 47
	20	13 26 32.511	+ 1.995	+ 9 28 51.52	+137.85	0.29	30.180627	- 65464	5 31
	24	13 26 34.506	- 0.060	+ 9 31 9.37	+148.15	0.29	30.115163	- 64098	5 15
	28	13 26 34.446	- 2.102	+ 9 33 37.52	+157.61	0.29	30.051065	- 62435	5 0
FEB	1	13 26 32.344	- 4.121	+ 9 36 15.13	+166.19	0.29	29.988630	- 60465	4 44
	5	13 26 28.223	- 6.108	+ 9 39 1.32	+173.77	0.29	29.928165	- 58181	4 28
	9	13 26 22.115	- 8.038	+ 9 41 55.09	+180.22	0.29	29.869984	- 55590	4 12
	13	13 26 14.077	- 9.896	+ 9 44 55.31	+185.52	0.29	29.814394	- 52722	3 56
	17	13 26 4.181	-11.671	+ 9 48 0.83	+189.69	0.30	29.761672	- 49610	3 40
	21	13 25 52.510	-13.359	+ 9 51 10.52	+192.72	0.30	29.712062	- 46275	3 25
	25	13 25 39.151	-14.959	+ 9 54 23.24	+194.61	0.30	29.665787	- 42731	3 9
MAR	1	13 25 24.192	-16.464	+ 9 57 37.85	+195.36	0.30	29.623056	- 38983	2 53
	5	13 25 7.728	-17.861	+10 0 53.21	+194.87	0.30	29.584073	- 35030	2 37
	9	13 24 49.867	-19.131	+10 4 8.08	+193.11	0.30	29.549043	- 30894	2 21
	13	13 24 30.736	-20.264	+10 7 21.19	+190.10	0.30	29.518149	- 26620	2 5
	17	13 24 10.472	-21.252	+10 10 31.29	+185.92	0.30	29.491529	- 22242	1 48
	21	13 23 49.220	-22.101	+10 13 37.21	+180.61	0.30	29.469287	- 17787	1 32
	25	13 23 27.119	-22.810	+10 16 37.82	+174.27	0.30	29.451500	- 13277	1 16
	29	13 23 4.309	-23.380	+10 19 32.09	+166.87	0.30	29.438223	- 8714	1 0
APR	2	13 22 40.929	-23.802	+10 22 18.96	+158.42	0.30	29.429509	- 4106	0 44
	6	13 22 17.127	-24.064	+10 24 57.38	+148.93	0.30	29.425403	+ 517	0 28
	10	13 21 53.063	-24.161	+10 27 26.31	+138.50	0.30	29.425920	+ 5112	0 12
	14	13 21 28.902	-24.099	+10 29 44.81	+127.24	0.30	29.431032	+ 9643	23 52
	18	13 21 4.803	-23.885	+10 31 52.05	+115.24	0.30	29.440675	+ 14086	23 36
	22	13 20 40.918	-23.530	+10 33 47.29	+102.62	0.30	29.454761	+ 18427	23 19
	26	13 20 17.388	-23.037	+10 35 29.91	+ 89.40	0.30	29.473188	+ 22664	23 3
	30	13 19 54.351	-22.404	+10 36 59.31	+ 75.60	0.30	29.495852	+ 26792	22 47
MAY	4	13 19 31.947	-21.625	+10 38 14.91	+ 61.29	0.30	29.522644	+ 30782	22 31
	8	13 19 10.322	-20.705	+10 39 16.20	+ 46.57	0.30	29.553426	+ 34596	22 15
	12	13 18 49.617	-19.654	+10 40 2.77	+ 31.58	0.30	29.588022	+ 38206	21 59
	16	13 18 29.963	-18.487	+10 40 34.35	+ 16.42	0.30	29.626228	+ 41598	21 43
	20	13 18 11.476	-17.218	+10 40 50.77	+ 1.20	0.30	29.667826	+ 44766	21 27
	24	13 17 54.258	-15.855	+10 40 51.97	- 14.05	0.30	29.712592	+ 47720	21 11
	28	13 17 38.403	-14.396	+10 40 37.92	- 29.34	0.30	29.760312	+ 50457	20 55
JUNE	1	13 17 24.007	-12.842	+10 40 8.58	- 44.57	0.29	29.810769	+ 52954	20 39
	5	13 17 11.165	-11.203	+10 39 24.01	- 59.66	0.29	29.863723	+ 55180	20 23
	9	13 16 59.962	- 9.491	+10 38 24.35	- 74.49	0.29	29.918903	+ 57124	20 7
	13	13 16 50.471	- 7.723	+10 37 9.86	- 88.95	0.29	29.976027	+ 58778	19 51
	17	13 16 42.748	- 5.913	+10 35 40.91	-102.99	0.29	30.034805	+ 60148	19 35
	21	13 16 36.835	- 4.072	+10 33 57.92	-116.61	0.29	30.094953	+ 61255	19 20
	25	13 16 32.763	- 2.195	+10 32 1.31	-129.81	0.29	30.156208	+ 62099	19 4
	29	13 16 30.568	- 0.285	+10 29 51.50	-142.53	0.29	30.218307	+ 62663	18 48

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DATE		RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H M S	S	O I .	. .	. .	AU		H M
JULY	3	13 16 30.283	+ 1.647	+10 27 28.97	-154.70	0.29	30.280970	+ 62929	18 32
	7	13 16 31.930	+ 3.588	+10 24 54.27	-166.22	0.29	30.343899	+ 62891	18 17
	11	13 16 35.518	+ 5.521	+10 22 8.05	-177.04	0.29	30.406790	+ 62556	18 1
	15	13 16 41.039	+ 7.436	+10 19 11.01	-187.11	0.29	30.469346	+ 61938	17 45
	19	13 16 48.475	+ 9.324	+10 16 3.90	-196.48	0.29	30.531284	+ 61062	17 30
AUG	23	13 16 57.799	+11.192	+10 12 47.42	-205.16	0.29	30.592346	+ 59938	17 14
	27	13 17 8.991	+13.037	+10 9 22.26	-213.11	0.29	30.652284	+ 58550	16 59
	31	13 17 22.028	+14.849	+10 5 49.15	-220.27	0.29	30.710834	+ 56887	16 43
	4	13 17 36.877	+16.613	+10 2 8.88	-226.58	0.29	30.767721	+ 54956	16 28
	8	13 17 53.490	+18.320	+ 9 58 22.30	-232.01	0.29	30.822677	+ 52768	16 12
	12	13 18 11.810	+19.958	+ 9 54 30.29	-236.55	0.28	30.875445	+ 50348	15 57
	16	13 18 31.768	+21.525	+ 9 50 33.74	-240.25	0.28	30.925793	+ 47724	15 41
	20	13 18 53.293	+23.027	+ 9 46 33.49	-243.15	0.28	30.973517	+ 44908	15 26
	24	13 19 16.320	+24.463	+ 9 42 30.34	-245.22	0.28	31.018425	+ 41889	15 11
	28	13 19 40.783	+25.823	+ 9 38 25.12	-246.40	0.28	31.060314	+ 38664	14 55
SEPT	1	13 20 6.606	+27.098	+ 9 34 18.72	-246.67	0.28	31.098978	+ 35244	14 40
	5	13 20 33.704	+28.274	+ 9 30 12.05	-246.02	0.28	31.134222	+ 31651	14 25
	9	13 21 1.978	+29.348	+ 9 26 6.03	-244.45	0.28	31.165873	+ 27913	14 10
	13	13 21 31.326	+30.319	+ 9 22 1.58	-242.03	0.28	31.193786	+ 24062	13 54
	17	13 22 1.645	+31.194	+ 9 17 59.55	-238.82	0.28	31.217848	+ 20111	13 39
	21	13 22 32.839	+31.974	+ 9 14 0.73	-234.78	0.28	31.237959	+ 16052	13 24
	25	13 23 4.813	+32.649	+ 9 10 5.95	-229.89	0.28	31.254011	+ 11891	13 9
	29	13 23 37.462	+33.211	+ 9 6 16.06	-224.13	0.28	31.265902	+ 7642	12 53
	3	13 24 10.673	+33.652	+ 9 2 31.93	-217.51	0.28	31.273544	+ 3332	12 38
	7	13 24 44.325	+33.967	+ 8 58 54.42	-210.07	0.28	31.276876	- 1003	12 23
OCT	11	13 25 18.292	+34.163	+ 8 55 24.35	-201.89	0.28	31.275873	- 5333	12 8
	15	13 25 52.455	+34.244	+ 8 52 2.46	-193.02	0.28	31.270540	- 9643	11 53
	19	13 26 26.699	+34.215	+ 8 48 49.44	-183.46	0.28	31.260897	- 13940	11 38
	23	13 27 0.914	+34.067	+ 8 45 45.98	-173.19	0.28	31.246957	- 18212	11 22
	27	13 27 34.981	+33.794	+ 8 42 52.79	-162.23	0.28	31.228745	- 22443	11 7
NOV	31	13 28 8.775	+33.390	+ 8 40 10.56	-150.60	0.28	31.206302	- 26600	10 52
	4	13 28 42.165	+32.856	+ 8 37 39.96	-138.37	0.28	31.179702	- 30647	10 37
	8	13 29 15.021	+32.200	+ 8 35 21.59	-125.64	0.28	31.149055	- 34552	10 22
	12	13 29 47.221	+31.430	+ 8 33 15.95	-112.47	0.28	31.114503	- 38311	10 7
	16	13 30 18.651	+30.552	+ 8 31 23.48	- 98.90	0.28	31.076192	- 41921	9 51
	20	13 30 49.203	+29.560	+ 8 29 44.58	- 84.91	0.28	31.034271	- 45376	9 36
	24	13 31 18.763	+28.451	+ 8 28 19.67	- 70.56	0.28	30.988895	- 48654	9 21
	28	13 31 47.214	+27.225	+ 8 27 9.11	- 55.87	0.28	30.940241	- 51730	9 6
	2	13 32 14.439	+25.883	+ 8 26 13.24	- 40.96	0.28	30.888511	- 54563	8 50
	6	13 32 40.322	+24.441	+ 8 25 32.28	- 25.97	0.29	30.833948	- 57133	8 35
DEC	10	13 33 4.763	+22.913	+ 8 25 6.31	- 10.95	0.29	30.776815	- 59437	8 20
	14	13 33 27.676	+21.301	+ 8 24 55.36	+ 4.05	0.29	30.717378	- 61485	8 4
	18	13 33 48.977	+19.607	+ 8 24 59.41	+ 19.00	0.29	30.655893	- 63268	7 49
	22	13 34 8.584	+17.833	+ 8 25 18.41	+ 33.87	0.29	30.592625	- 64773	7 34
	26	13 34 26.417	+15.979	+ 8 25 52.28	+ 48.55	0.29	30.527852	- 65978	7 18
	30	13 34 42.396	+14.057	+ 8 26 40.83	+ 62.94	0.29	30.461874	- 66853	7 3

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS				
		H	M	S	S	O	I	II	II	II	AU		H	M			
JAN	3	13	34	56.453	+12.084	+	8	27	43.77	+	76.89	0.29	30.395021	-	67388	6	47
	7	13	35	8.537	+10.078	+	8	29	0.66	+	90.35	0.29	30.327633	-	67597	6	32
	11	13	35	18.615	+ 8.046	+	8	30	31.01	+103.24	0.29	30.260036	-	67493	6	16	
	15	13	35	26.661	+ 5.991	+	8	32	14.25	+115.58	0.29	30.192543	-	67080	6	1	
	19	13	35	32.652	+ 3.917	+	8	34	9.83	+127.27	0.29	30.125463	-	66355	5	45	
	23	13	35	36.569	+ 1.832	+	8	36	17.10	+138.25	0.29	30.059108	-	65306	5	29	
	27	13	35	38.401	- 0.251	+	8	38	35.35	+148.40	0.29	29.993802	-	63915	5	14	
	31	13	35	38.150	- 2.309	+	8	41	3.75	+157.60	0.29	29.929887	-	62191	4	58	
FEB	4	13	35	35.841	- 4.325	+	8	43	41.35	+165.80	0.29	29.867696	-	60160	4	42	
	8	13	35	31.516	- 6.293	+	8	46	27.15	+172.99	0.30	29.807536	-	57849	4	26	
	12	13	35	25.223	- 8.206	+	8	49	20.14	+179.17	0.30	29.749687	-	55272	4	10	
	16	13	35	17.017	-10.062	+	8	52	19.31	+184.30	0.30	29.694415	-	52436	3	55	
	20	13	35	6.955	-11.849	+	8	55	23.61	+188.35	0.30	29.641979	-	49341	3	39	
	24	13	34	55.106	-13.557	+	8	58	31.96	+191.20	0.30	29.592638	-	45986	3	23	
	28	13	34	41.549	-15.161	+	9	1	43.16	+192.81	0.30	29.546652	-	42389	3	7	
MAR	4	13	34	26.388	-16.649	+	9	4	55.97	+193.18	0.30	29.504263	-	38594	2	51	
	8	13	34	9.739	-18.018	+	9	8	9.15	+192.35	0.30	29.465669	-	34634	2	35	
	12	13	33	51.721	-19.265	+	9	11	21.50	+190.38	0.30	29.431035	-	30532	2	19	
	16	13	33	32.456	-20.389	+	9	14	31.88	+187.27	0.30	29.400503	-	26300	2	3	
	20	13	33	12.067	-21.388	+	9	17	39.15	+183.03	0.30	29.374203	-	21946	1	47	
	24	13	32	50.679	-22.247	+	9	20	42.18	+177.61	0.30	29.352257	-	17477	1	31	
APR	28	13	32	28.432	-22.952	+	9	23	39.79	+171.04	0.30	29.334780	-	12922	1	15	
	1	13	32	5.480	-23.496	+	9	26	30.83	+163.35	0.30	29.321858	-	8330	0	58	
	5	13	31	41.984	-23.885	+	9	29	14.18	+154.69	0.30	29.313528	-	3735	0	42	
	9	13	31	18.099	-24.122	+	9	31	48.87	+145.12	0.30	29.309793	+	841	0	26	
	13	13	30	53.977	-24.212	+	9	34	13.99	+134.70	0.30	29.310634	+	5385	0	10	
	17	13	30	29.765	-24.159	+	9	36	28.69	+123.50	0.30	29.316019	+	9890	23	50	
	21	13	30	5.606	-23.952	+	9	38	32.19	+111.49	0.30	29.325909	+	14348	23	34	
	25	13	29	41.654	-23.588	+	9	40	23.68	+	98.73	0.30	29.340257	+	18726	23	18
	29	13	29	18.066	-23.066	+	9	42	2.41	+	85.36	0.30	29.358983	+	22982	23	2
MAY	3	13	28	55.000	-22.400	+	9	43	27.77	+	71.48	0.30	29.381965	+	27083	22	45
	7	13	28	32.600	-21.600	+	9	44	39.25	+	57.22	0.30	29.409048	+	31019	22	29
	11	13	28	11.000	-20.677	+	9	45	36.47	+	42.65	0.30	29.440067	+	34781	22	13
	15	13	27	50.323	-19.637	+	9	46	19.12	+	27.82	0.30	29.474848	+	38372	21	57
	19	13	27	30.686	-18.477	+	9	46	46.94	+	12.73	0.30	29.513220	+	41784	21	41
	23	13	27	12.209	-17.196	+	9	46	59.67	-	2.53	0.30	29.555004	+	44990	21	25
	27	13	26	55.013	-15.805	+	9	46	57.14	-	17.84	0.30	29.599994	+	47954	21	9
JUNE	31	13	26	39.208	-14.316	+	9	46	39.30	-	33.08	0.30	29.647948	+	50659	20	53
	4	13	26	24.892	-12.747	+	9	46	6.22	-	48.17	0.30	29.698607	+	53101	20	37
	8	13	26	12.145	-11.110	+	9	45	18.05	-	63.01	0.30	29.751708	+	55282	20	21
	12	13	26	1.035	- 9.411	+	9	44	15.04	-	77.62	0.30	29.806990	+	57216	20	5
	16	13	25	51.624	- 7.649	+	9	42	57.42	-	91.96	0.29	29.864206	+	58898	19	49
	20	13	25	43.975	- 5.829	+	9	41	25.46	-105.99	0.29	29.923104	+	60308	19	34	
	24	13	25	38.146	- 3.957	+	9	39	39.47	-119.59	0.29	29.983412	+	61420	19	18	
	28	13	25	34.189	- 2.056	+	9	37	39.88	-132.68	0.29	30.044832	+	62228	19	2	

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O ' "	" "	" "	AU		H M
JULY 2	13 25 32.133	- 0.136	+ 9 35 27.20	-145.18	0.29	30.107060	+ 62740	18 46
6	13 25 31.997	+ 1.790	+ 9 33 2.02	-157.07	0.29	30.169800	+ 62966	18 31
10	13 25 33.787	+ 3.715	+ 9 30 24.95	-168.34	0.29	30.232766	+ 62929	18 15
14	13 25 37.502	+ 5.644	+ 9 27 36.61	-179.01	0.29	30.295695	+ 62629	17 59
18	13 25 43.146	+ 7.572	+ 9 24 37.60	-189.05	0.29	30.358324	+ 62048	17 44
22	13 25 50.718	+ 9.488	+ 9 21 28.55	-198.36	0.29	30.420372	+ 61173	17 28
26	13 26 0.206	+11.377	+ 9 18 10.19	-206.88	0.29	30.481545	+ 60009	17 12
30	13 26 11.583	+13.226	+ 9 14 43.31	-214.58	0.29	30.541554	+ 58568	16 57
AUG 3	13 26 24.809	+15.027	+ 9 11 8.73	-221.43	0.29	30.600122	+ 56872	16 41
7	13 26 39.836	+16.776	+ 9 7 27.30	-227.50	0.29	30.656994	+ 54948	16 26
11	13 26 56.612	+18.477	+ 9 3 39.80	-232.78	0.29	30.711942	+ 52797	16 10
15	13 27 15.089	+20.131	+ 8 59 47.02	-237.28	0.29	30.764739	+ 50410	15 55
19	13 27 35.220	+21.722	+ 8 55 49.74	-240.90	0.29	30.815149	+ 47779	15 40
23	13 27 56.942	+23.240	+ 8 51 48.84	-243.61	0.28	30.862928	+ 44918	15 24
27	13 28 20.182	+24.675	+ 8 47 45.23	-245.41	0.28	30.907846	+ 41847	15 9
SEPT 31	13 28 44.857	+26.019	+ 8 43 39.82	-246.29	0.28	30.949693	+ 38592	14 54
4	13 29 10.876	+27.274	+ 8 39 33.53	-246.34	0.28	30.988285	+ 35185	14 38
8	13 29 38.150	+28.446	+ 8 35 27.19	-245.55	0.28	31.023470	+ 31631	14 23
12	13 30 6.596	+29.533	+ 8 31 21.64	-243.95	0.28	31.055101	+ 27919	14 8
16	13 30 36.129	+30.523	+ 8 27 17.69	-241.44	0.28	31.083020	+ 24053	13 53
20	13 31 6.652	+31.408	+ 8 23 16.25	-238.05	0.28	31.107073	+ 20055	13 37
24	13 31 38.060	+32.178	+ 8 19 18.20	-233.75	0.28	31.127128	+ 15946	13 22
28	13 32 10.238	+32.831	+ 8 15 24.45	-228.59	0.28	31.143074	+ 11762	13 7
OCT 2	13 32 43.069	+33.370	+ 8 11 35.86	-222.63	0.28	31.154836	+ 7532	12 52
6	13 33 16.439	+33.802	+ 8 7 53.23	-215.95	0.28	31.162368	+ 3264	12 37
10	13 33 50.241	+34.127	+ 8 4 17.28	-208.49	0.28	31.165632	- 1047	12 21
14	13 34 24.368	+34.334	+ 8 0 48.79	-200.26	0.28	31.164585	- 5395	12 6
18	13 34 58.702	+34.418	+ 7 57 28.53	-191.23	0.28	31.159190	- 9752	11 51
22	13 35 33.120	+34.369	+ 7 54 17.30	-181.46	0.28	31.149438	- 14090	11 36
26	13 36 7.489	+34.192	+ 7 51 15.84	-171.00	0.28	31.135348	- 18374	11 21
NOV 30	13 36 41.681	+33.891	+ 7 48 24.84	-159.91	0.28	31.116974	- 22573	11 6
3	13 37 15.572	+33.476	+ 7 45 44.93	-148.30	0.28	31.094401	- 26681	10 50
7	13 37 49.048	+32.946	+ 7 43 16.63	-136.13	0.28	31.067720	- 30701	10 35
11	13 38 21.994	+32.295	+ 7 41 0.50	-123.42	0.28	31.037019	- 34624	10 20
15	13 38 54.289	+31.519	+ 7 38 57.08	-110.18	0.28	31.002395	- 38420	10 5
19	13 39 25.808	+30.614	+ 7 37 6.90	- 96.47	0.28	30.963975	- 42060	9 50
23	13 39 56.422	+29.588	+ 7 35 30.43	- 82.40	0.28	30.921915	- 45508	9 34
27	13 40 26.010	+28.449	+ 7 34 8.03	- 68.04	0.28	30.876407	- 48742	9 19
DEC 1	13 40 54.459	+27.209	+ 7 32 59.99	- 53.50	0.29	30.827665	- 51756	9 4
5	13 41 21.668	+25.871	+ 7 32 6.49	- 38.78	0.29	30.775909	- 54560	8 49
9	13 41 47.539	+24.432	+ 7 31 27.71	- 23.90	0.29	30.721349	- 57140	8 33
13	13 42 11.971	+22.891	+ 7 31 3.81	- 8.91	0.29	30.664209	- 59474	8 18
17	13 42 34.862	+21.251	+ 7 30 54.90	+ 6.09	0.29	30.604735	- 61538	8 3
21	13 42 56.113	+19.521	+ 7 31 0.99	+ 21.01	0.29	30.543197	- 63298	7 47
25	13 43 15.634	+17.720	+ 7 31 22.00	+ 35.71	0.29	30.479899	- 64743	7 32
29	13 43 33.354	+15.858	+ 7 31 57.71	+ 50.12	0.29	30.415156	- 65883	7 17

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O ' "	"	"	AU		H M
JAN 2	13 43 49.212	+13.942	+ 7 32 47.83	+ 64.20	0.29	30.349273	- 66728	7 1
6	13 44 3.154	+11.975	+ 7 33 52.03	+ 77.94	0.29	30.282545	- 67273	6 46
10	13 44 15.129	+ 9.959	+ 7 35 9.97	+ 91.25	0.29	30.215272	- 67506	6 30
14	13 44 25.088	+ 7.900	+ 7 36 41.22	+104.06	0.29	30.147766	- 67411	6 14
18	13 44 32.988	+ 5.814	+ 7 38 25.28	+116.22	0.29	30.080355	- 66967	5 59
22	13 44 38.802	+ 3.723	+ 7 40 21.50	+127.64	0.29	30.013388	- 66177	5 43
26	13 44 42.525	+ 1.641	+ 7 42 29.14	+138.25	0.29	29.947211	- 65066	5 28
30	13 44 44.166	- 0.426	+ 7 44 47.39	+148.02	0.29	29.882145	- 63655	5 12
FEB 3	13 44 43.740	- 2.474	+ 7 47 15.41	+156.95	0.29	29.818490	- 61949	4 56
7	13 44 41.266	- 4.495	+ 7 49 52.36	+164.97	0.30	29.756541	- 59946	4 40
11	13 44 36.771	- 6.481	+ 7 52 37.33	+172.02	0.30	29.696595	- 57644	4 25
15	13 44 30.290	- 8.416	+ 7 55 29.35	+177.99	0.30	29.638951	- 55036	4 9
19	13 44 21.874	-10.276	+ 7 58 27.34	+182.82	0.30	29.583915	- 52142	3 53
23	13 44 11.598	-12.049	+ 8 1 30.16	+186.46	0.30	29.531773	- 49000	3 37
27	13 43 59.549	-13.730	+ 8 4 36.62	+188.97	0.30	29.482773	- 45640	3 21
MAR 2	13 43 45.819	-15.316	+ 8 7 45.59	+190.34	0.30	29.437133	- 42077	3 5
6	13 43 30.503	-16.805	+ 8 10 55.93	+190.59	0.30	29.395056	- 38320	2 49
10	13 43 13.698	-18.185	+ 8 14 6.52	+189.68	0.30	29.356736	- 34373	2 33
14	13 42 55.513	-19.444	+ 8 17 16.20	+187.54	0.30	29.322363	- 30246	2 17
18	13 42 36.069	-20.564	+ 8 20 23.74	+184.17	0.30	29.292117	- 25965	2 1
22	13 42 15.505	-21.536	+ 8 23 27.91	+179.61	0.30	29.266152	- 21582	1 45
26	13 41 53.969	-22.362	+ 8 26 27.52	+173.96	0.30	29.244570	- 17127	1 29
30	13 41 31.607	-23.047	+ 8 29 21.48	+167.28	0.30	29.227443	- 12622	1 13
APR 3	13 41 8.560	-23.590	+ 8 32 8.76	+159.59	0.30	29.214821	- 8073	0 57
7	13 40 44.970	-23.987	+ 8 34 48.35	+150.95	0.30	29.206748	- 3495	0 41
11	13 40 20.983	-24.231	+ 8 37 19.30	+141.32	0.30	29.203253	+ 1105	0 24
15	13 39 56.752	-24.309	+ 8 39 40.62	+130.76	0.30	29.204358	+ 5689	0 8
19	13 39 32.443	-24.224	+ 8 41 51.38	+119.36	0.30	29.210047	+ 10209	23 48
23	13 39 8.219	-23.985	+ 8 43 50.74	+107.27	0.30	29.220256	+ 14638	23 32
27	13 38 44.234	-23.602	+ 8 45 38.01	+ 94.56	0.30	29.234894	+ 18961	23 16
MAY 1	13 38 20.632	-23.082	+ 8 47 12.57	+ 81.32	0.30	29.253855	+ 23170	23 0
5	13 37 57.550	-22.424	+ 8 48 33.89	+ 67.58	0.30	29.277025	+ 27262	22 44
9	13 37 35.126	-21.629	+ 8 49 41.47	+ 53.36	0.30	29.304287	+ 31224	22 28
13	13 37 13.497	-20.690	+ 8 50 34.83	+ 38.75	0.30	29.335511	+ 35024	22 11
17	13 36 52.807	-19.619	+ 8 51 13.58	+ 23.84	0.30	29.370535	+ 38622	21 55
21	13 36 33.188	-18.429	+ 8 51 37.42	+ 8.81	0.30	29.409157	+ 41996	21 39
25	13 36 14.759	-17.136	+ 8 51 46.23	- 6.28	0.30	29.451153	+ 45147	21 23
29	13 35 57.623	-15.748	+ 8 51 39.95	- 21.36	0.30	29.496300	+ 48072	21 7
JUNE 2	13 35 41.875	-14.272	+ 8 51 18.59	- 36.40	0.30	29.544372	+ 50776	20 51
6	13 35 27.603	-12.705	+ 8 50 42.19	- 51.36	0.30	29.595148	+ 53251	20 35
10	13 35 14.898	-11.051	+ 8 49 50.83	- 66.19	0.30	29.648399	+ 55471	20 19
14	13 35 3.847	- 9.321	+ 8 48 44.64	- 80.77	0.30	29.703870	+ 57405	20 4
18	13 34 54.526	- 7.536	+ 8 47 23.87	- 94.99	0.30	29.761275	+ 59048	19 48
22	13 34 46.990	- 5.705	+ 8 45 48.88	-108.78	0.29	29.820323	+ 60404	19 32
26	13 34 41.285	- 3.844	+ 8 44 0.10	-122.09	0.29	29.880727	+ 61486	19 16
30	13 34 37.441	- 1.954	+ 8 41 58.01	-134.93	0.29	29.942213	+ 62303	19 0

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DATE		RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H M S	S	° ' "	"	"	AU		H M
JULY	4	13 34 35.487	- 0.036	+ 8 39 43.08	-147.29	0.29	30.004516	+ 62854	18 44
	8	13 34 35.451	+ 1.908	+ 8 37 15.79	-159.13	0.29	30.067370	+ 63116	18 29
	12	13 34 37.359	+ 3.863	+ 8 34 36.66	-170.34	0.29	30.130486	+ 63074	18 13
	16	13 34 41.222	+ 5.812	+ 8 31 46.32	-180.83	0.29	30.193560	+ 62730	17 57
	20	13 34 47.034	+ 7.743	+ 8 28 45.49	-190.60	0.29	30.256290	+ 62099	17 42
AUG	24	13 34 54.777	+ 9.647	+ 8 25 34.89	-199.59	0.29	30.318389	+ 61200	17 26
	28	13 35 4.424	+11.524	+ 8 22 15.30	-207.87	0.29	30.379589	+ 60050	17 11
	1	13 35 15.948	+13.373	+ 8 18 47.43	-215.43	0.29	30.439639	+ 58650	16 55
	5	13 35 29.321	+15.192	+ 8 15 12.00	-222.23	0.29	30.498289	+ 56986	16 40
	9	13 35 44.513	+16.968	+ 8 11 29.77	-228.20	0.29	30.555275	+ 55046	16 24
	13	13 36 1.481	+18.685	+ 8 7 41.57	-233.30	0.29	30.610321	+ 52848	16 9
	17	13 36 20.166	+20.335	+ 8 3 48.27	-237.49	0.29	30.663169	+ 50411	15 53
	21	13 36 40.501	+21.911	+ 7 59 50.78	-240.82	0.29	30.713580	+ 47760	15 38
	25	13 37 2.412	+23.415	+ 7 55 49.96	-243.30	0.29	30.761340	+ 44916	15 23
	29	13 37 25.827	+24.850	+ 7 51 46.66	-244.97	0.29	30.806256	+ 41885	15 7
SEPT	2	13 37 50.677	+26.211	+ 7 47 41.69	-245.82	0.29	30.848141	+ 38654	14 52
	6	13 38 16.888	+27.488	+ 7 43 35.87	-245.76	0.28	30.886795	+ 35223	14 37
	10	13 38 44.376	+28.669	+ 7 39 30.11	-244.79	0.28	30.922018	+ 31615	14 21
	14	13 39 13.045	+29.745	+ 7 35 25.32	-242.89	0.28	30.953633	+ 27856	14 6
	18	13 39 42.790	+30.715	+ 7 31 22.43	-240.13	0.28	30.981489	+ 23974	13 51
	22	13 40 13.505	+31.581	+ 7 27 22.30	-236.52	0.28	31.005463	+ 19997	13 36
	26	13 40 45.086	+32.349	+ 7 23 25.78	-232.16	0.28	31.025460	+ 15929	13 20
	30	13 41 17.435	+33.015	+ 7 19 33.62	-226.98	0.28	31.041389	+ 11760	13 5
	4	13 41 50.450	+33.569	+ 7 15 46.64	-220.96	0.28	31.053149	+ 7502	12 50
	8	13 42 24.019	+34.000	+ 7 12 5.68	-214.10	0.28	31.060651	+ 3181	12 35
OCT	12	13 42 58.019	+34.307	+ 7 8 31.58	-206.40	0.28	31.063832	- 1173	12 20
	16	13 43 32.326	+34.486	+ 7 5 5.18	-197.96	0.28	31.062659	- 5527	12 5
	20	13 44 6.812	+34.546	+ 7 1 47.22	-188.82	0.28	31.057132	- 9854	11 49
	24	13 44 41.358	+34.491	+ 6 58 38.40	-179.04	0.28	31.047278	- 14148	11 34
	28	13 45 15.849	+34.322	+ 6 55 39.36	-168.63	0.28	31.033130	- 18418	11 19
	1	13 45 50.171	+34.028	+ 6 52 50.73	-157.54	0.28	31.014712	- 22644	11 4
	5	13 46 24.199	+33.602	+ 6 50 13.19	-145.81	0.28	30.992068	- 26800	10 49
NOV	9	13 46 57.801	+33.046	+ 6 47 47.38	-133.50	0.28	30.965268	- 30850	10 34
	13	13 47 30.847	+32.362	+ 6 45 33.88	-120.67	0.28	30.934418	- 34763	10 18
	17	13 48 3.209	+31.557	+ 6 43 33.21	-107.44	0.28	30.899655	- 38516	10 3
	21	13 48 34.766	+30.645	+ 6 41 45.77	- 93.84	0.28	30.861139	- 42105	9 48
	25	13 49 5.411	+29.622	+ 6 40 11.93	- 79.93	0.29	30.819034	- 45534	9 33
	29	13 49 35.033	+28.484	+ 6 38 52.00	- 65.67	0.29	30.773500	- 48790	9 18
	3	13 50 3.517	+27.228	+ 6 37 46.33	- 51.12	0.29	30.724710	- 51842	9 2
DEC	7	13 50 30.745	+25.858	+ 6 36 55.21	- 36.36	0.29	30.672868	- 54659	8 47
	11	13 50 56.603	+24.383	+ 6 36 18.85	- 21.52	0.29	30.618209	- 57213	8 32
	15	13 51 20.986	+22.816	+ 6 35 57.33	- 6.68	0.29	30.560996	- 59491	8 16
	19	13 51 43.802	+21.170	+ 6 35 50.65	+ 8.06	0.29	30.501505	- 61495	8 1
	23	13 52 4.972	+19.445	+ 6 35 58.71	+ 22.71	0.29	30.440010	- 63234	7 46
	27	13 52 24.417	+17.644	+ 6 36 21.42	+ 37.20	0.29	30.376776	- 64699	7 30
	31	13 52 42.061	+15.765	+ 6 36 58.62	+ 51.50	0.29	30.312077	- 65865	7 15

ASTROMETRIC POSITIONS OF PLUTO 1970-1990 FOR OH ET

--- 1981 ---

DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O ' "	"	"	AU		H M
JAN 4	13 52 57.826	+13.819	+ 6 37 50.12	+ 65.49	0.29	30.246212	- 66712	6 59
8	13 53 11.645	+11.820	+ 6 38 55.61	+ 79.07	0.29	30.179500	- 67221	6 44
12	13 53 23.465	+ 9.784	+ 6 40 14.68	+ 92.10	0.29	30.112279	- 67388	6 28
16	13 53 33.249	+ 7.728	+ 6 41 46.78	+104.53	0.29	30.044891	- 67235	6 13
20	13 53 40.977	+ 5.655	+ 6 43 31.31	+116.32	0.29	29.977656	- 66774	5 57
24	13 53 46.632	+ 3.568	+ 6 45 27.63	+127.47	0.29	29.910882	- 66009	5 42
28	13 53 50.200	+ 1.473	+ 6 47 35.10	+137.90	0.29	29.844873	- 64923	5 26
FEB 1	13 53 51.673	- 0.617	+ 6 49 53.00	+147.51	0.30	29.779950	- 63510	5 10
5	13 53 51.056	- 2.688	+ 6 52 20.51	+156.22	0.30	29.716440	- 61764	4 54
9	13 53 48.368	- 4.716	+ 6 54 56.73	+163.89	0.30	29.654676	- 59700	4 39
13	13 53 43.652	- 6.687	+ 6 57 40.62	+170.52	0.30	29.594976	- 57350	4 23
17	13 53 36.965	- 8.600	+ 7 0 31.14	+176.13	0.30	29.537626	- 54742	4 7
21	13 53 28.365	-10.449	+ 7 3 27.27	+180.70	0.30	29.482884	- 51882	3 51
25	13 53 17.916	-12.228	+ 7 6 27.97	+184.19	0.30	29.431002	- 48771	3 35
MAR 1	13 53 5.688	-13.926	+ 7 9 32.16	+186.57	0.30	29.382231	- 45413	3 19
5	13 52 51.762	-15.524	+ 7 12 38.73	+187.74	0.30	29.336818	- 41815	3 3
9	13 52 36.238	-17.006	+ 7 15 46.47	+187.69	0.30	29.295003	- 38005	2 47
13	13 52 19.232	-18.362	+ 7 18 54.16	+186.41	0.30	29.256998	- 34031	2 31
17	13 52 0.870	-19.590	+ 7 22 0.57	+184.00	0.30	29.222967	- 29920	2 15
21	13 51 41.280	-20.695	+ 7 25 4.57	+180.51	0.30	29.193047	- 25687	1 59
25	13 51 20.585	-21.669	+ 7 28 5.08	+175.91	0.30	29.167360	- 21342	1 43
29	13 50 58.916	-22.507	+ 7 31 0.99	+170.23	0.30	29.146018	- 16892	1 27
APR 2	13 50 36.409	-23.196	+ 7 33 51.22	+163.46	0.30	29.129126	- 12354	1 11
6	13 50 13.213	-23.724	+ 7 36 34.68	+155.57	0.30	29.116772	- 7765	0 55
10	13 49 49.489	-24.090	+ 7 39 10.25	+146.71	0.30	29.109007	- 3173	0 39
14	13 49 25.399	-24.301	+ 7 41 36.96	+136.97	0.30	29.105834	+ 1392	0 23
18	13 49 1.098	-24.366	+ 7 43 53.93	+126.43	0.30	29.107226	+ 5922	0 7
22	13 48 36.732	-24.282	+ 7 46 0.36	+115.15	0.30	29.113148	+ 10404	23 46
26	13 48 12.450	-24.054	+ 7 47 55.51	+103.16	0.30	29.123552	+ 14832	23 30
30	13 47 48.396	-23.671	+ 7 49 38.67	+ 90.48	0.30	29.138384	+ 19185	23 14
MAY 4	13 47 24.725	-23.131	+ 7 51 9.15	+ 77.16	0.30	29.157569	+ 23433	22 58
8	13 47 1.594	-22.441	+ 7 52 26.31	+ 63.34	0.30	29.181002	+ 27525	22 42
12	13 46 39.153	-21.616	+ 7 53 29.65	+ 49.17	0.30	29.208527	+ 31447	22 26
16	13 46 17.537	-20.667	+ 7 54 18.82	+ 34.72	0.30	29.239974	+ 35191	22 10
20	13 45 56.870	-19.602	+ 7 54 53.54	+ 20.06	0.30	29.275165	+ 38756	21 54
24	13 45 37.268	-18.421	+ 7 55 13.60	+ 5.22	0.30	29.313921	+ 42139	21 38
28	13 45 18.847	-17.127	+ 7 55 18.82	- 9.77	0.30	29.356060	+ 45326	21 22
JUNE 1	13 45 1.720	-15.718	+ 7 55 9.05	- 24.83	0.30	29.401386	+ 48286	21 6
5	13 44 46.002	-14.210	+ 7 54 44.22	- 39.84	0.30	29.449672	+ 50985	20 50
9	13 44 31.792	-12.618	+ 7 54 4.38	- 54.66	0.30	29.500657	+ 53416	20 34
13	13 44 19.174	-10.959	+ 7 53 9.72	- 69.23	0.30	29.554073	+ 55583	20 18
17	13 44 8.215	- 9.239	+ 7 52 0.49	- 83.50	0.30	29.609656	+ 57496	20 2
21	13 43 58.976	- 7.463	+ 7 50 36.99	- 97.48	0.30	29.667152	+ 59154	19 46
25	13 43 51.513	- 5.630	+ 7 48 59.51	-111.12	0.30	29.726306	+ 60553	19 30
29	13 43 45.883	- 3.746	+ 7 47 8.39	-124.38	0.30	29.786859	+ 61666	19 14

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H	M	S	S	O	I	II	II	II	AU		H M
JULY	3	13	43	42.137	- 1.826	+ 7	45	4.01	-137.15	0.29	29.848525	+ 62473	18 58
	7	13	43	40.311	+ 0.112	+ 7	42	46.86	-149.30	0.29	29.910998	+ 62976	18 43
	11	13	43	40.423	+ 2.056	+ 7	40	17.56	-160.83	0.29	29.973974	+ 63192	18 27
	15	13	43	42.479	+ 4.000	+ 7	37	36.73	-171.71	0.29	30.037166	+ 63134	18 11
	19	13	43	46.479	+ 5.938	+ 7	34	45.02	-181.97	0.29	30.100300	+ 62812	17 56
AUG	23	13	43	52.417	+ 7.874	+ 7	31	43.05	-191.58	0.29	30.163112	+ 62224	17 40
	27	13	44	0.291	+ 9.802	+ 7	28	31.47	-200.52	0.29	30.225336	+ 61351	17 24
	31	13	44	10.093	+11.704	+ 7	25	10.95	-208.68	0.29	30.286687	+ 60183	17 9
	4	13	44	21.797	+13.569	+ 7	21	42.27	-216.02	0.29	30.346870	+ 58732	16 53
	8	13	44	35.366	+15.383	+ 7	18	6.25	-222.50	0.29	30.405602	+ 57021	16 38
	12	13	44	50.749	+17.144	+ 7	14	23.75	-228.16	0.29	30.462623	+ 55072	16 22
	16	13	45	7.893	+18.851	+ 7	10	35.59	-233.03	0.29	30.517695	+ 52898	16 7
	20	13	45	26.744	+20.506	+ 7	6	42.56	-237.10	0.29	30.570593	+ 50502	15 52
	24	13	45	47.250	+22.103	+ 7	2	45.46	-240.37	0.29	30.621095	+ 47868	15 36
	28	13	46	9.353	+23.630	+ 6	58	45.09	-242.75	0.29	30.668963	+ 44996	15 21
SEPT	1	13	46	32.983	+25.072	+ 6	54	42.34	-244.19	0.29	30.713959	+ 41909	15 5
	5	13	46	58.055	+26.423	+ 6	50	38.15	-244.74	0.29	30.755868	+ 38634	14 50
	9	13	47	24.478	+27.681	+ 6	46	33.41	-244.39	0.29	30.794502	+ 35196	14 35
	13	13	47	52.159	+28.848	+ 6	42	29.02	-243.23	0.29	30.829698	+ 31615	14 20
	17	13	48	21.007	+29.927	+ 6	38	25.79	-241.27	0.28	30.861313	+ 27893	14 4
OCT	21	13	48	50.934	+30.915	+ 6	34	24.52	-238.46	0.28	30.889206	+ 24021	13 49
	25	13	49	21.849	+31.796	+ 6	30	26.06	-234.79	0.28	30.913227	+ 20007	13 34
	29	13	49	53.645	+32.563	+ 6	26	31.27	-230.21	0.28	30.933234	+ 15881	13 19
	3	13	50	26.208	+33.210	+ 6	22	41.06	-224.78	0.28	30.949115	+ 11675	13 4
	7	13	50	59.418	+33.739	+ 6	18	56.28	-218.53	0.28	30.960790	+ 7415	12 48
	11	13	51	33.157	+34.154	+ 6	15	17.75	-211.55	0.28	30.968205	+ 3125	12 33
	15	13	52	7.311	+34.458	+ 6	11	46.20	-203.86	0.28	30.971330	- 1192	12 18
	19	13	52	41.769	+34.649	+ 6	8	22.34	-195.44	0.28	30.970138	- 5540	12 3
	23	13	53	16.418	+34.716	+ 6	5	6.90	-186.27	0.28	30.964598	- 9905	11 48
	27	13	53	51.134	+34.651	+ 6	2	0.63	-176.36	0.28	30.954693	- 14253	11 33
NOV	31	13	54	25.785	+34.454	+ 5	59	4.27	-165.76	0.28	30.940440	- 18550	11 17
	4	13	55	0.239	+34.128	+ 5	56	18.51	-154.56	0.28	30.921890	- 22766	11 2
	8	13	55	34.367	+33.682	+ 5	53	43.95	-142.82	0.28	30.899124	- 26879	10 47
	12	13	56	8.049	+33.119	+ 5	51	21.13	-130.61	0.28	30.872245	- 30888	10 32
	16	13	56	41.168	+32.441	+ 5	49	10.52	-117.92	0.29	30.841357	- 34796	10 17
DEC	20	13	57	13.609	+31.638	+ 5	47	12.60	-104.74	0.29	30.806561	- 38582	10 2
	24	13	57	45.247	+30.705	+ 5	45	27.86	- 91.12	0.29	30.767979	- 42212	9 46
	28	13	58	15.952	+29.650	+ 5	43	56.74	- 77.14	0.29	30.725767	- 45656	9 31
	2	13	58	45.602	+28.477	+ 5	42	39.60	- 62.89	0.29	30.680111	- 48883	9 16
	6	13	59	14.079	+27.197	+ 5	41	36.71	- 48.47	0.29	30.631228	- 51882	9 1
	10	13	59	41.276	+25.823	+ 5	40	48.24	- 33.98	0.29	30.579346	- 54650	8 45
	14	14	0	7.099	+24.352	+ 5	40	14.26	- 19.38	0.29	30.524696	- 57195	8 30
	18	14	0	31.451	+22.782	+ 5	39	54.88	- 4.71	0.29	30.467501	- 59501	8 15
	22	14	0	54.233	+21.112	+ 5	39	50.17	+ 9.95	0.29	30.408000	- 61535	7 59
	26	14	1	15.345	+19.355	+ 5	40	0.12	+ 24.51	0.29	30.346465	- 63273	7 44
	30	14	1	34.700	+17.520	+ 5	40	24.63	+ 38.86	0.29	30.283192	- 64697	7 29

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS	
		H	M	S	S	O	I	II	II	II	AU		H	M
JAN	3	14	1	52.220	+15.624	+ 5	41	3.49	+ 52.88	0.29	30.218495	- 65800	7	13
	7	14	2	7.844	+13.678	+ 5	41	56.37	+ 66.50	0.29	30.152695	- 66595	6	58
	11	14	2	21.522	+11.687	+ 5	43	2.87	+ 79.70	0.29	30.086100	- 67097	6	42
	15	14	2	33.209	+ 9.651	+ 5	44	22.57	+ 92.49	0.29	30.019003	- 67292	6	27
	19	14	2	42.860	+ 7.574	+ 5	45	55.06	+104.74	0.29	29.951711	- 67163	6	11
	23	14	2	50.434	+ 5.473	+ 5	47	39.80	+116.37	0.29	29.884548	- 66693	5	56
	27	14	2	55.907	+ 3.362	+ 5	49	36.17	+127.27	0.29	29.817855	- 65879	5	40
	31	14	2	59.269	+ 1.259	+ 5	51	43.44	+137.34	0.30	29.751976	- 64731	5	24
FEB	4	14	3	0.528	- 0.821	+ 5	54	0.78	+146.51	0.30	29.687245	- 63275	5	8
	8	14	2	59.707	- 2.873	+ 5	56	27.29	+154.82	0.30	29.623970	- 61532	4	53
	12	14	2	56.834	- 4.897	+ 5	59	2.11	+162.23	0.30	29.562438	- 59502	4	37
	16	14	2	51.937	- 6.882	+ 6	1	44.34	+168.71	0.30	29.502936	- 57178	4	21
	20	14	2	45.055	- 8.815	+ 6	4	33.05	+174.14	0.30	29.445758	- 54560	4	5
	24	14	2	36.240	-10.677	+ 6	7	27.19	+178.45	0.30	29.391198	- 51655	3	49
	28	14	2	25.563	-12.451	+ 6	10	25.64	+181.60	0.30	29.339543	- 48490	3	34
MAR	4	14	2	13.112	-14.124	+ 6	13	27.24	+183.58	0.30	29.291053	- 45104	3	18
	8	14	1	58.988	-15.699	+ 6	16	30.82	+184.44	0.30	29.245949	- 41526	3	2
	12	14	1	43.289	-17.170	+ 6	19	35.26	+184.21	0.30	29.204423	- 37761	2	46
	16	14	1	26.119	-18.533	+ 6	22	39.47	+182.88	0.30	29.166662	- 33816	2	30
	20	14	1	7.586	-19.775	+ 6	25	42.35	+180.40	0.30	29.132846	- 29697	2	14
	24	14	0	47.811	-20.883	+ 6	28	42.75	+176.73	0.30	29.103149	- 25426	1	58
	28	14	0	26.928	-21.841	+ 6	31	39.48	+171.89	0.30	29.077723	- 21037	1	41
APR	1	14	0	5.087	-22.648	+ 6	34	31.37	+165.94	0.30	29.056686	- 16577	1	25
	5	13	59	42.439	-23.307	+ 6	37	17.31	+159.01	0.30	29.040109	- 12074	1	9
	9	13	59	19.132	-23.824	+ 6	39	56.32	+151.14	0.30	29.028035	- 7538	0	53
	13	13	58	55.308	-24.195	+ 6	42	27.46	+142.36	0.30	29.020497	- 2976	0	37
	17	13	58	31.113	-24.415	+ 6	44	49.82	+132.67	0.30	29.017521	+ 1599	0	21
	21	13	58	6.698	-24.477	+ 6	47	2.49	+122.12	0.30	29.019120	+ 6165	0	5
	25	13	57	42.221	-24.372	+ 6	49	4.61	+110.71	0.30	29.025285	+ 10682	23	45
	29	13	57	17.849	-24.108	+ 6	50	55.32	+ 98.62	0.30	29.035967	+ 15106	23	29
MAY	3	13	56	53.741	-23.698	+ 6	52	33.94	+ 85.96	0.30	29.051073	+ 19418	23	12
	7	13	56	30.043	-23.149	+ 6	53	59.90	+ 72.81	0.30	29.070491	+ 23609	22	56
	11	13	56	6.894	-22.467	+ 6	55	12.71	+ 59.21	0.30	29.094100	+ 27679	22	40
	15	13	55	44.427	-21.648	+ 6	56	11.92	+ 45.23	0.30	29.121779	+ 31614	22	24
	19	13	55	22.779	-20.694	+ 6	56	57.15	+ 30.85	0.30	29.153393	+ 35398	22	8
	23	13	55	2.085	-19.603	+ 6	57	28.00	+ 16.19	0.30	29.188791	+ 38994	21	52
	27	13	54	42.482	-18.390	+ 6	57	44.19	+ 1.37	0.30	29.227785	+ 42366	21	36
	31	13	54	24.092	-17.072	+ 6	57	45.56	- 13.46	0.30	29.270151	+ 45504	21	20
JUNE	4	13	54	7.020	-15.659	+ 6	57	32.10	- 28.23	0.30	29.315655	+ 48415	21	4
	8	13	53	51.361	-14.160	+ 6	57	3.87	- 42.93	0.30	29.364070	+ 51099	20	48
	12	13	53	37.201	-12.575	+ 6	56	20.94	- 57.51	0.30	29.415169	+ 53553	20	32
	16	13	53	24.626	-10.909	+ 6	55	23.43	- 71.95	0.30	29.468722	+ 55763	20	16
	20	13	53	13.717	- 9.163	+ 6	54	11.48	- 86.16	0.30	29.524485	+ 57702	20	0
	24	13	53	4.554	- 7.356	+ 6	52	45.32	-100.03	0.30	29.582187	+ 59344	19	44
	28	13	52	57.198	- 5.504	+ 6	51	5.29	-113.44	0.30	29.641531	+ 60692	19	28

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O . "	"	"	AU		H M
JULY 2	13 52 51.694	- 3.622	+ 6 49 11.85	-126.37	0.30	29.702223	+ 61762	19 13
6	13 52 48.072	- 1.713	+ 6 47 5.48	-138.78	0.30	29.763985	+ 62561	18 57
10	13 52 46.359	+ 0.219	+ 6 44 46.70	-150.69	0.29	29.826546	+ 63094	18 41
14	13 52 46.578	+ 2.172	+ 6 42 16.01	-162.07	0.29	29.889640	+ 63352	18 25
18	13 52 48.750	+ 4.140	+ 6 39 33.94	-172.88	0.29	29.952992	+ 63316	18 10
22	13 52 52.890	+ 6.107	+ 6 36 41.06	-182.99	0.29	30.016308	+ 62970	17 54
26	13 52 58.997	+ 8.056	+ 6 33 38.07	-192.35	0.29	30.079278	+ 62328	17 38
30	13 53 7.053	+ 9.977	+ 6 30 25.72	-200.93	0.29	30.141606	+ 61416	17 23
AUG 3	13 53 17.030	+11.867	+ 6 27 4.79	-208.77	0.29	30.203022	+ 60245	17 7
7	13 53 28.897	+13.725	+ 6 23 36.02	-215.86	0.29	30.263267	+ 58826	16 52
11	13 53 42.622	+15.548	+ 6 20 0.16	-222.23	0.29	30.322093	+ 57154	16 36
15	13 53 58.170	+17.333	+ 6 16 17.93	-227.81	0.29	30.379247	+ 55218	16 21
19	13 54 15.503	+19.064	+ 6 12 30.12	-232.55	0.29	30.434465	+ 53011	16 5
23	13 54 34.567	+20.724	+ 6 8 37.57	-236.35	0.29	30.487476	+ 50556	15 50
27	13 54 55.291	+22.311	+ 6 4 41.22	-239.29	0.29	30.538032	+ 47886	15 35
31	13 55 17.602	+23.820	+ 6 0 41.93	-241.37	0.29	30.585918	+ 45015	15 19
SEPT 4	13 55 41.422	+25.254	+ 5 56 40.56	-242.63	0.29	30.630933	+ 41960	15 4
8	13 56 6.676	+26.612	+ 5 52 37.93	-243.09	0.29	30.672893	+ 38718	14 49
12	13 56 33.288	+27.891	+ 5 48 34.84	-242.71	0.29	30.711611	+ 35283	14 33
16	13 57 1.179	+29.075	+ 5 44 32.13	-241.43	0.29	30.746894	+ 31661	14 18
20	13 57 30.254	+30.151	+ 5 40 30.70	-239.22	0.29	30.778555	+ 27879	14 3
24	13 58 0.405	+31.120	+ 5 36 31.48	-236.14	0.29	30.806434	+ 23973	13 48
28	13 58 31.525	+31.980	+ 5 32 35.34	-232.22	0.29	30.830407	+ 19966	13 32
OCT 2	13 59 3.505	+32.735	+ 5 28 43.12	-227.54	0.29	30.850373	+ 15873	13 17
6	13 59 36.240	+33.385	+ 5 24 55.58	-222.08	0.28	30.866246	+ 11696	13 2
10	14 0 9.625	+33.929	+ 5 21 13.50	-215.86	0.28	30.877942	+ 7433	12 47
14	14 0 43.554	+34.350	+ 5 17 37.64	-208.81	0.28	30.885375	+ 3097	12 32
18	14 1 17.904	+34.644	+ 5 14 8.83	-200.94	0.28	30.888472	- 1275	12 16
22	14 1 52.548	+34.808	+ 5 10 47.89	-192.32	0.28	30.887197	- 5648	12 1
26	14 2 27.356	+34.847	+ 5 7 35.57	-183.01	0.28	30.881549	- 9999	11 46
30	14 3 2.203	+34.764	+ 5 4 32.56	-173.09	0.28	30.871550	- 14308	11 31
NOV 3	14 3 36.967	+34.567	+ 5 1 39.47	-162.58	0.28	30.857242	- 18572	11 16
7	14 4 11.534	+34.249	+ 4 58 56.89	-151.49	0.29	30.838670	- 22794	11 1
11	14 4 45.783	+33.801	+ 4 56 25.40	-139.77	0.29	30.815876	- 26950	10 46
15	14 5 19.584	+33.219	+ 4 54 5.63	-127.49	0.29	30.788926	- 31005	10 30
19	14 5 52.803	+32.507	+ 4 51 58.14	-114.70	0.29	30.757921	- 34924	10 15
23	14 6 25.310	+31.670	+ 4 50 3.44	-101.53	0.29	30.722997	- 38680	10 0
27	14 6 56.980	+30.719	+ 4 48 21.91	- 88.03	0.29	30.684317	- 42263	9 45
DEC 1	14 7 27.699	+29.659	+ 4 46 53.88	- 74.28	0.29	30.642054	- 45667	9 30
5	14 7 57.358	+28.491	+ 4 45 39.60	- 60.26	0.29	30.596387	- 48899	9 14
9	14 8 25.849	+27.205	+ 4 44 39.34	- 45.98	0.29	30.547488	- 51933	8 59
13	14 8 53.054	+25.804	+ 4 43 53.36	- 31.53	0.29	30.495555	- 54735	8 44
17	14 9 18.858	+24.297	+ 4 43 21.83	- 16.98	0.29	30.440820	- 57275	8 28
21	14 9 43.155	+22.694	+ 4 43 4.85	- 2.46	0.29	30.383545	- 59537	8 13
25	14 10 5.849	+21.009	+ 4 43 2.39	+ 11.92	0.29	30.324008	- 61512	7 58
29	14 10 26.858	+19.250	+ 4 43 14.31	+ 26.12	0.29	30.262496	- 63209	7 42

--- 1983 ---

DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O ° ' "	"	"	AU		H M
JAN 2	14 10 46.108	+17.421	+ 4 43 40.43	+ 40.11	0.29	30.199287	- 64634	7 27
6	14 11 3.529	+15.517	+ 4 44 20.54	+ 53.90	0.29	30.134653	- 65769	7 12
10	14 11 19.046	+13.547	+ 4 45 14.44	+ 67.37	0.29	30.068884	- 66588	6 56
14	14 11 32.593	+11.523	+ 4 46 21.81	+ 80.42	0.29	30.002296	- 67072	6 41
18	14 11 44.116	+ 9.461	+ 4 47 42.23	+ 92.92	0.29	29.935224	- 67215	6 25
22	14 11 53.577	+ 7.377	+ 4 49 15.15	+104.79	0.29	29.868009	- 67023	6 9
26	14 12 0.954	+ 5.283	+ 4 50 59.94	+115.97	0.30	29.800986	- 66517	5 54
30	14 12 6.237	+ 3.184	+ 4 52 55.91	+126.46	0.30	29.734469	- 65711	5 38
FEB 3	14 12 9.421	+ 1.079	+ 4 55 2.37	+136.26	0.30	29.668758	- 64596	5 23
7	14 12 10.500	- 1.020	+ 4 57 18.63	+145.27	0.30	29.604162	- 63160	5 7
11	14 12 9.480	- 3.096	+ 4 59 43.90	+153.36	0.30	29.541002	- 61395	4 51
15	14 12 6.384	- 5.135	+ 5 2 17.26	+160.48	0.30	29.479607	- 59314	4 35
19	14 12 1.249	- 7.115	+ 5 4 57.74	+166.53	0.30	29.420293	- 56935	4 20
23	14 11 54.134	- 9.028	+ 5 7 44.27	+171.54	0.30	29.363358	- 54291	4 4
27	14 11 45.106	-10.869	+ 5 10 35.81	+175.50	0.30	29.309067	- 51408	3 48
MAR 3	14 11 34.237	-12.640	+ 5 13 31.31	+178.45	0.30	29.257659	- 48285	3 32
7	14 11 21.597	-14.326	+ 5 16 29.76	+180.33	0.30	29.209374	- 44920	3 16
11	14 11 7.271	-15.914	+ 5 19 30.09	+181.05	0.30	29.164454	- 41322	3 0
15	14 10 51.357	-17.389	+ 5 22 31.14	+180.60	0.30	29.123132	- 37512	2 44
19	14 10 33.968	-18.736	+ 5 25 31.74	+178.94	0.30	29.085620	- 33524	2 28
23	14 10 15.232	-19.948	+ 5 28 30.68	+176.13	0.30	29.052096	- 29398	2 12
27	14 9 55.284	-21.029	+ 5 31 26.81	+172.28	0.30	29.022698	- 25162	1 56
31	14 9 34.255	-21.980	+ 5 34 19.09	+167.41	0.30	28.997536	- 20824	1 40
APR 4	14 9 12.275	-22.796	+ 5 37 6.50	+161.51	0.30	28.976712	- 16385	1 24
8	14 8 49.479	-23.463	+ 5 39 48.01	+154.58	0.30	28.960327	- 11863	1 8
12	14 8 26.016	-23.975	+ 5 42 22.59	+146.61	0.30	28.948464	- 7287	0 51
16	14 8 2.041	-24.322	+ 5 44 49.20	+137.66	0.30	28.941177	- 2693	0 35
20	14 7 37.719	-24.509	+ 5 47 6.86	+127.84	0.30	28.938484	+ 1876	0 19
24	14 7 13.210	-24.542	+ 5 49 14.70	+117.28	0.30	28.940360	+ 6394	0 3
28	14 6 48.668	-24.433	+ 5 51 11.98	+106.03	0.30	28.946754	+ 10860	23 43
MAY 2	14 6 24.235	-24.177	+ 5 52 58.01	+ 94.15	0.30	28.957614	+ 15269	23 27
6	14 6 0.058	-23.771	+ 5 54 32.16	+ 81.62	0.30	28.972883	+ 19601	23 11
10	14 5 36.287	-23.214	+ 5 55 53.78	+ 68.52	0.30	28.992484	+ 23833	22 55
14	14 5 13.073	-22.504	+ 5 57 2.30	+ 54.89	0.30	29.016317	+ 27928	22 38
18	14 4 50.569	-21.651	+ 5 57 57.19	+ 40.92	0.30	29.044245	+ 31848	22 22
22	14 4 28.918	-20.675	+ 5 58 38.11	+ 26.71	0.30	29.076093	+ 35581	22 6
26	14 4 8.243	-19.582	+ 5 59 4.82	+ 12.35	0.30	29.111674	+ 39130	21 50
30	14 3 48.661	-18.379	+ 5 59 17.17	- 2.15	0.30	29.150804	+ 42494	21 34
JUNE 3	14 3 30.282	-17.063	+ 5 59 15.02	- 16.75	0.30	29.193298	+ 45664	21 18
7	14 3 13.219	-15.641	+ 5 58 58.27	- 31.41	0.30	29.238962	+ 48615	21 2
11	14 2 57.578	-14.112	+ 5 58 26.86	- 46.05	0.30	29.287577	+ 51321	20 46
15	14 2 43.466	-12.498	+ 5 57 40.81	- 60.50	0.30	29.338898	+ 53753	20 30
19	14 2 30.968	-10.812	+ 5 56 40.31	- 74.68	0.30	29.392651	+ 55912	20 14
23	14 2 20.156	- 9.071	+ 5 55 25.63	- 88.52	0.30	29.448563	+ 57811	19 58
27	14 2 11.085	- 7.273	+ 5 53 57.11	-102.03	0.30	29.506374	+ 59456	19 42

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H	M	S	S	O	'	"	"	"	AU		H M
JULY	1	14	2	3.812	- 5.425	+ 5	52	15.08	-115.19	0.30	29.565830	+ 60839	19 27
	5	14	1	58.387	- 3.530	+ 5	50	19.89	-127.96	0.30	29.626669	+ 61951	19 11
	9	14	1	54.857	- 1.593	+ 5	48	11.93	-140.29	0.30	29.688620	+ 62767	18 55
	13	14	1	53.264	+ 0.366	+ 5	45	51.64	-152.02	0.30	29.751387	+ 63271	18 39
	17	14	1	53.630	+ 2.331	+ 5	43	19.62	-163.11	0.29	29.814658	+ 63477	18 24
AUG	21	14	1	55.961	+ 4.293	+ 5	40	36.51	-173.53	0.29	29.878135	+ 63407	18 8
	25	14	2	0.254	+ 6.247	+ 5	37	42.98	-183.29	0.29	29.941542	+ 63069	17 52
	29	14	2	6.501	+ 8.195	+ 5	34	39.69	-192.41	0.29	30.004611	+ 62466	17 37
	2	14	2	14.696	+10.128	+ 5	31	27.28	-200.87	0.29	30.067077	+ 61591	17 21
	6	14	2	24.824	+12.045	+ 5	28	6.41	-208.61	0.29	30.128668	+ 60427	17 6
	10	14	2	36.869	+13.926	+ 5	24	37.80	-215.53	0.29	30.189095	+ 58972	16 50
	14	14	2	50.795	+15.755	+ 5	21	2.27	-221.60	0.29	30.248067	+ 57245	16 35
	18	14	3	6.550	+17.529	+ 5	17	20.67	-226.81	0.29	30.305312	+ 55277	16 19
	22	14	3	24.079	+19.244	+ 5	13	33.86	-231.23	0.29	30.360589	+ 53082	16 4
	26	14	3	43.323	+20.903	+ 5	9	42.63	-234.87	0.29	30.413671	+ 50664	15 48
SEPT	30	14	4	4.226	+22.501	+ 5	5	47.76	-237.70	0.29	30.464335	+ 48022	15 33
	3	14	4	26.727	+24.033	+ 5	1	50.06	-239.72	0.29	30.512357	+ 45150	15 17
	7	14	4	50.760	+25.484	+ 4	57	50.34	-240.84	0.29	30.557507	+ 42048	15 2
	11	14	5	16.244	+26.841	+ 4	53	49.50	-241.01	0.29	30.599555	+ 38749	14 47
	15	14	5	43.085	+28.101	+ 4	49	48.49	-240.31	0.29	30.638304	+ 35285	14 32
OCT	19	14	6	11.186	+29.266	+ 4	45	48.18	-238.79	0.29	30.673589	+ 31676	14 16
	23	14	6	40.452	+30.338	+ 4	41	49.39	-236.47	0.29	30.705265	+ 27930	14 1
	27	14	7	10.790	+31.314	+ 4	37	52.92	-233.36	0.29	30.733195	+ 24047	13 46
	1	14	7	42.104	+32.191	+ 4	33	59.56	-229.44	0.29	30.757242	+ 20027	13 31
	5	14	8	14.295	+32.954	+ 4	30	10.12	-224.64	0.29	30.777269	+ 15883	13 15
	9	14	8	47.249	+33.593	+ 4	26	25.48	-218.98	0.29	30.793152	+ 11650	13 0
	13	14	9	20.842	+34.111	+ 4	22	46.50	-212.51	0.29	30.804802	+ 7365	12 45
	17	14	9	54.953	+34.508	+ 4	19	13.99	-205.31	0.29	30.812167	+ 3048	12 30
	21	14	10	29.461	+34.790	+ 4	15	48.68	-197.43	0.29	30.815215	- 1288	12 15
	25	14	11	4.251	+34.958	+ 4	12	31.25	-188.88	0.29	30.813927	- 5640	12 0
NOV	29	14	11	39.209	+35.006	+ 4	9	22.37	-179.66	0.29	30.808287	- 10007	11 45
	2	14	12	14.215	+34.923	+ 4	6	22.71	-169.70	0.29	30.798280	- 14366	11 29
	6	14	12	49.138	+34.704	+ 4	3	33.01	-159.08	0.29	30.783914	- 18680	11 14
	10	14	13	23.842	+34.352	+ 4	0	53.93	-147.85	0.29	30.765234	- 22909	10 59
	14	14	13	58.194	+33.875	+ 3	58	26.08	-136.13	0.29	30.742325	- 27037	10 44
DEC	18	14	14	32.069	+33.277	+ 3	56	9.95	-123.96	0.29	30.715288	- 31047	10 29
	22	14	15	5.346	+32.564	+ 3	54	5.99	-111.39	0.29	30.684241	- 34942	10 14
	26	14	15	37.910	+31.731	+ 3	52	14.60	- 98.40	0.29	30.649299	- 38713	9 58
	30	14	16	9.641	+30.771	+ 3	50	36.20	- 85.00	0.29	30.610586	- 42339	9 43
	4	14	16	40.412	+29.683	+ 3	49	11.20	- 71.24	0.29	30.568247	- 45779	9 28
	8	14	17	10.095	+28.476	+ 3	47	59.96	- 57.24	0.29	30.522468	- 49002	9 13
	12	14	17	38.571	+27.160	+ 3	47	2.72	- 43.12	0.29	30.473466	- 51991	8 57
	16	14	18	5.731	+25.744	+ 3	46	19.60	- 28.93	0.29	30.421475	- 54741	8 42
	20	14	18	31.475	+24.236	+ 3	45	50.67	- 14.74	0.29	30.366734	- 57252	8 27
	24	14	18	55.711	+22.634	+ 3	45	35.93	- 0.55	0.29	30.309482	- 59524	8 12
	28	14	19	18.345	+20.938	+ 3	45	35.38	+ 13.65	0.29	30.249958	- 61536	7 56

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DATE		RA (1950.0)		DIFF	DEC (1950.0)		DIFF	HP	TRUE DIST	DIFF	ET TRANS						
		H	M	S	S	O	'	''	''	AU		H	M				
JAN	1	14	19	39.283	+19.149	+	3	45	49.03	+	27.71	0.29	30.188422	-	63254	7	41
	5	14	19	58.432	+17.284	+	3	46	16.74	+	41.56	0.29	30.125168	-	64655	7	25
	9	14	20	15.716	+15.354	+	3	46	58.30	+	55.05	0.29	30.060513	-	65736	7	10
	13	14	20	31.070	+13.375	+	3	47	53.35	+	68.12	0.29	29.994777	-	66497	6	54
	17	14	20	44.445	+11.357	+	3	49	1.47	+	80.70	0.29	29.928280	-	66950	6	39
FEB	21	14	20	55.802	+ 9.301	+	3	50	22.17	+	92.81	0.29	29.861330	-	67107	6	23
	25	14	21	5.103	+ 7.208	+	3	51	54.98	+104.42	0.30	29.794223	-	66949	6	8	
	29	14	21	12.311	+ 5.089	+	3	53	39.40	+115.41	0.30	29.727274	-	66455	5	52	
	2	14	21	17.400	+ 2.962	+	3	55	34.81	+125.68	0.30	29.660819	-	65619	5	37	
	6	14	21	20.362	+ 0.842	+	3	57	40.49	+135.11	0.30	29.595200	-	64447	5	21	
MAR	10	14	21	21.204	- 1.254	+	3	59	55.60	+143.65	0.30	29.530753	-	62956	5	5	
	14	14	21	19.950	- 3.315	+	4	2	19.25	+151.28	0.30	29.467797	-	61171	4	49	
	18	14	21	16.635	- 5.338	+	4	4	50.53	+158.03	0.30	29.406626	-	59113	4	34	
	22	14	21	11.297	- 7.321	+	4	7	28.56	+163.87	0.30	29.347513	-	56772	4	18	
	26	14	21	3.976	- 9.251	+	4	10	12.43	+168.71	0.30	29.290741	-	54140	4	2	
APR	1	14	20	54.725	-11.110	+	4	13	1.14	+172.49	0.30	29.236601	-	51226	3	46	
	5	14	20	43.615	-12.883	+	4	15	53.63	+175.13	0.30	29.185375	-	48052	3	30	
	9	14	20	30.732	-14.554	+	4	18	48.76	+176.60	0.30	29.137323	-	44645	3	14	
	13	14	20	16.178	-16.115	+	4	21	45.36	+176.96	0.30	29.092678	-	41042	2	58	
	17	14	20	0.063	-17.568	+	4	24	42.32	+176.27	0.30	29.051636	-	37269	2	42	
MAY	21	14	19	42.495	-18.912	+	4	27	38.59	+174.54	0.30	29.014367	-	33325	2	26	
	25	14	19	23.583	-20.136	+	4	30	33.13	+171.74	0.30	28.981042	-	29211	2	10	
	29	14	19	3.447	-21.226	+	4	33	24.87	+167.80	0.30	28.951831	-	24948	1	54	
	2	14	18	42.221	-22.169	+	4	36	12.67	+162.75	0.30	28.926883	-	20565	1	38	
	6	14	18	20.052	-22.960	+	4	38	55.42	+156.62	0.30	28.906318	-	16098	1	22	
JUNE	10	14	17	57.092	-23.594	+	4	41	32.04	+149.50	0.30	28.890220	-	11587	1	6	
	14	14	17	33.498	-24.082	+	4	44	1.54	+141.50	0.30	28.878633	-	7057	0	50	
	18	14	17	9.416	-24.426	+	4	46	23.04	+132.68	0.30	28.871576	-	2511	0	34	
	22	14	16	44.990	-24.621	+	4	48	35.72	+123.03	0.30	28.869065	+	2048	0	18	
	26	14	16	20.369	-24.659	+	4	50	38.75	+112.54	0.30	28.871113	+	6597	0	1	
JULY	30	14	15	55.710	-24.535	+	4	52	31.29	+101.29	0.30	28.877710	+	11103	23	41	
	4	14	15	31.175	-24.251	+	4	54	12.58	+ 89.33	0.30	28.888813	+	15530	23	25	
	8	14	15	6.924	-23.812	+	4	55	41.91	+ 76.80	0.30	28.904343	+	19843	23	9	
	12	14	14	43.112	-23.232	+	4	56	58.71	+ 63.86	0.30	28.924186	+	24022	22	53	
	16	14	14	19.880	-22.522	+	4	58	2.57	+ 50.55	0.30	28.948208	+	28075	22	37	
AUG	20	14	13	57.358	-21.679	+	4	58	53.12	+ 36.88	0.30	28.976283	+	31994	22	21	
	24	14	13	35.679	-20.704	+	4	59	30.00	+ 22.86	0.30	29.008277	+	35762	22	5	
	28	14	13	14.975	-19.596	+	4	59	52.86	+ 8.60	0.30	29.044039	+	39352	21	49	
	1	14	12	55.379	-18.361	+	5	0	1.46	- 5.85	0.30	29.083391	+	42730	21	32	
	5	14	12	37.018	-17.016	+	4	59	55.61	- 20.31	0.30	29.126121	+	45873	21	16	
SEP	9	14	12	20.002	-15.576	+	4	59	35.30	- 34.68	0.30	29.171994	+	48773	21	0	
	13	14	12	4.426	-14.052	+	4	59	0.62	- 48.91	0.30	29.220767	+	51444	20	44	
	17	14	11	50.374	-12.448	+	4	58	11.71	- 63.00	0.30	29.272211	+	53887	20	28	
	21	14	11	37.926	-10.762	+	4	57	8.71	- 76.93	0.30	29.326098	+	56086	20	13	
	25	14	11	27.164	- 9.003	+	4	55	51.78	- 90.64	0.30	29.382184	+	58026	19	57	
OCT	29	14	11	18.161	- 7.176	+	4	54	21.14	-104.02	0.30	29.440210	+	59679	19	41	

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H	M	S	S	°	'	"	"	"	AU		H M
JULY	3	14	11	10.985	- 5.301	+ 4	52	37.12	-116.99	0.30	29.499889	+ 61031	19 25
	7	14	11	5.684	- 3.394	+ 4	50	40.13	-129.41	0.30	29.560920	+ 62093	19 9
	11	14	11	2.290	- 1.466	+ 4	48	30.72	-141.31	0.30	29.623013	+ 62880	18 53
	15	14	11	0.824	+ 0.483	+ 4	46	9.41	-152.68	0.30	29.685893	+ 63404	18 38
	19	14	11	1.307	+ 2.450	+ 4	43	36.73	-163.52	0.30	29.749297	+ 63652	18 22
AUG	23	14	11	3.757	+ 4.429	+ 4	40	53.21	-173.81	0.29	29.812949	+ 63616	18 6
	27	14	11	8.186	+ 6.412	+ 4	37	59.40	-183.46	0.29	29.876565	+ 63281	17 51
	31	14	11	14.598	+ 8.381	+ 4	34	55.94	-192.35	0.29	29.939846	+ 62638	17 35
	4	14	11	22.979	+10.321	+ 4	31	43.59	-200.46	0.29	30.002484	+ 61711	17 19
	8	14	11	33.300	+12.225	+ 4	28	23.13	-207.79	0.29	30.064195	+ 60525	17 4
	12	14	11	45.525	+14.094	+ 4	24	55.34	-214.40	0.29	30.124720	+ 59089	16 48
	16	14	11	59.619	+15.926	+ 4	21	20.94	-220.27	0.29	30.183809	+ 57404	16 33
	20	14	12	15.545	+17.716	+ 4	17	40.67	-225.39	0.29	30.241213	+ 55462	16 17
	24	14	12	33.261	+19.456	+ 4	13	55.28	-229.71	0.29	30.296675	+ 53256	16 2
	28	14	12	52.717	+21.131	+ 4	10	5.57	-233.14	0.29	30.349931	+ 50791	15 47
SEPT	1	14	13	13.848	+22.727	+ 4	6	12.43	-235.66	0.29	30.400722	+ 48096	15 31
	5	14	13	36.575	+24.242	+ 4	2	16.77	-237.32	0.29	30.448818	+ 45202	15 16
	9	14	14	0.817	+25.677	+ 3	58	19.45	-238.18	0.29	30.494020	+ 42120	15 1
	13	14	14	26.494	+27.034	+ 3	54	21.27	-238.24	0.29	30.536140	+ 38858	14 45
	17	14	14	53.528	+28.308	+ 3	50	23.03	-237.51	0.29	30.574998	+ 35411	14 30
	21	14	15	21.836	+29.491	+ 3	46	25.52	-235.94	0.29	30.610409	+ 31782	14 15
	25	14	15	51.327	+30.571	+ 3	42	29.58	-233.46	0.29	30.642191	+ 27981	13 59
	29	14	16	21.898	+31.536	+ 3	38	36.12	-230.08	0.29	30.670172	+ 24044	13 44
	3	14	16	53.434	+32.389	+ 3	34	46.04	-225.89	0.29	30.694216	+ 20008	13 29
	7	14	17	25.823	+33.131	+ 3	31	0.15	-220.94	0.29	30.714224	+ 15887	13 14
	11	14	17	58.954	+33.765	+ 3	27	19.21	-215.26	0.29	30.730111	+ 11687	12 59
	15	14	18	32.719	+34.290	+ 3	23	43.95	-208.84	0.29	30.741798	+ 7415	12 43
	19	14	19	7.009	+34.699	+ 3	20	15.11	-201.69	0.29	30.749213	+ 3072	12 28
	23	14	19	41.708	+34.980	+ 3	16	53.42	-193.72	0.29	30.752285	- 1320	12 13
	27	14	20	16.688	+35.125	+ 3	13	39.70	-185.00	0.29	30.750965	- 5719	11 58
NOV	31	14	20	51.813	+35.141	+ 3	10	34.70	-175.62	0.29	30.745246	- 10092	11 43
	4	14	21	26.954	+35.032	+ 3	7	39.08	-165.64	0.29	30.735154	- 14421	11 28
	8	14	22	1.986	+34.803	+ 3	4	53.44	-155.14	0.29	30.720733	- 18696	11 13
	12	14	22	36.789	+34.454	+ 3	2	18.30	-144.09	0.29	30.702037	- 22913	10 57
	16	14	23	11.243	+33.979	+ 2	59	54.21	-132.52	0.29	30.679124	- 27066	10 42
	20	14	23	45.222	+33.372	+ 2	57	41.69	-120.38	0.29	30.652058	- 31126	10 27
	24	14	24	18.594	+32.628	+ 2	55	41.31	-107.76	0.29	30.620932	- 35055	10 12
	28	14	24	51.222	+31.757	+ 2	53	53.55	- 94.78	0.29	30.585877	- 38816	9 57
	2	14	25	22.979	+30.769	+ 2	52	18.77	- 81.51	0.29	30.547061	- 42398	9 42
	6	14	25	53.748	+29.669	+ 2	50	57.26	- 68.03	0.29	30.504663	- 45794	9 26
DEC	10	14	26	23.417	+28.462	+ 2	49	49.23	- 54.37	0.29	30.458869	- 48999	9 11
	14	14	26	51.879	+27.145	+ 2	48	54.86	- 40.51	0.29	30.409870	- 52010	8 56
	18	14	27	19.024	+25.713	+ 2	48	14.35	- 26.48	0.29	30.357860	- 54799	8 41
	22	14	27	44.737	+24.173	+ 2	47	47.87	- 12.38	0.29	30.303061	- 57330	8 25
	26	14	28	8.910	+22.533	+ 2	47	35.49	+ 1.67	0.29	30.245731	- 59575	8 10
	30	14	28	31.443	+20.811	+ 2	47	37.16	+ 15.54	0.29	30.186156	- 61532	7 55

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O ' "	"	"	AU		H M
JAN 3	14 28 52.254	+19.014	+ 2 47 52.70	+ 29.20	0.29	30.124624	- 63198	7 39
7	14 29 11.268	+17.152	+ 2 48 21.90	+ 42.59	0.29	30.061426	- 64582	7 24
11	14 29 28.420	+15.224	+ 2 49 4.49	+ 55.71	0.29	29.996844	- 65680	7 8
15	14 29 43.644	+13.230	+ 2 50 0.20	+ 68.53	0.29	29.931164	- 66475	6 53
19	14 29 56.874	+11.182	+ 2 51 8.73	+ 80.94	0.29	29.864689	- 66937	6 37
23	14 30 8.056	+ 9.095	+ 2 52 29.67	+ 92.78	0.30	29.797752	- 67056	6 22
27	14 30 17.151	+ 6.985	+ 2 54 2.45	+103.98	0.30	29.730696	- 66838	6 6
31	14 30 24.136	+ 4.869	+ 2 55 46.43	+114.48	0.30	29.663858	- 66295	5 51
FEB 4	14 30 29.005	+ 2.753	+ 2 57 40.91	+124.25	0.30	29.597563	- 65446	5 35
8	14 30 31.758	+ 0.642	+ 2 59 45.16	+133.31	0.30	29.532117	- 64297	5 19
12	14 30 32.400	- 1.463	+ 3 1 58.47	+141.61	0.30	29.467820	- 62841	5 4
16	14 30 30.937	- 3.547	+ 3 4 20.08	+149.06	0.30	29.404979	- 61061	4 48
20	14 30 27.390	- 5.590	+ 3 6 49.14	+155.54	0.30	29.343918	- 58962	4 32
24	14 30 21.800	- 7.577	+ 3 9 24.68	+160.99	0.30	29.284956	- 56565	4 16
28	14 30 14.223	- 9.493	+ 3 12 5.67	+165.37	0.30	29.228391	- 53894	4 0
MAR 4	14 30 4.730	-11.329	+ 3 14 51.04	+168.73	0.30	29.174497	- 50980	3 44
8	14 29 53.401	-13.086	+ 3 17 39.77	+171.10	0.30	29.123517	- 47841	3 29
12	14 29 40.315	-14.759	+ 3 20 30.87	+172.47	0.30	29.075676	- 44472	3 13
16	14 29 25.556	-16.337	+ 3 23 23.34	+172.75	0.30	29.031204	- 40873	2 57
20	14 29 9.219	-17.799	+ 3 26 16.09	+171.91	0.30	28.990331	- 37062	2 41
24	14 28 51.420	-19.134	+ 3 29 8.00	+169.90	0.30	28.953269	- 33070	2 25
28	14 28 32.286	-20.333	+ 3 31 57.90	+166.78	0.30	28.920199	- 28931	2 9
APR 1	14 28 11.953	-21.393	+ 3 34 44.68	+162.62	0.30	28.891268	- 24683	1 53
5	14 27 50.560	-22.317	+ 3 37 27.30	+157.50	0.30	28.866585	- 20344	1 36
9	14 27 28.243	-23.107	+ 3 40 4.80	+151.45	0.30	28.846241	- 15918	1 20
13	14 27 5.136	-23.752	+ 3 42 36.25	+144.44	0.31	28.830323	- 11408	1 4
17	14 26 41.384	-24.242	+ 3 45 0.69	+136.45	0.31	28.818915	- 6842	0 48
21	14 26 17.142	-24.570	+ 3 47 17.14	+127.52	0.31	28.812073	- 2254	0 32
25	14 25 52.572	-24.735	+ 3 49 24.66	+117.76	0.31	28.809819	+ 2319	0 16
29	14 25 27.837	-24.740	+ 3 51 22.42	+107.24	0.31	28.812138	+ 6843	23 56
MAY 3	14 25 3.097	-24.597	+ 3 53 9.66	+ 96.14	0.31	28.818981	+ 11298	23 40
7	14 24 38.500	-24.314	+ 3 54 45.80	+ 84.47	0.31	28.830279	+ 15689	23 23
11	14 24 14.186	-23.884	+ 3 56 10.27	+ 72.22	0.30	28.845968	+ 20008	23 7
15	14 23 50.302	-23.303	+ 3 57 22.49	+ 59.41	0.30	28.865976	+ 24228	22 51
19	14 23 26.999	-22.572	+ 3 58 21.90	+ 46.15	0.30	28.890204	+ 28318	22 35
23	14 23 4.427	-21.698	+ 3 59 8.05	+ 32.52	0.30	28.918522	+ 32245	22 19
27	14 22 42.729	-20.691	+ 3 59 40.57	+ 18.66	0.30	28.950767	+ 35983	22 3
31	14 22 22.038	-19.568	+ 3 59 59.23	+ 4.70	0.30	28.986750	+ 39522	21 47
JUNE 4	14 22 2.470	-18.339	+ 4 0 3.93	- 9.33	0.30	29.026272	+ 42872	21 31
8	14 21 44.131	-17.002	+ 3 59 54.60	- 23.44	0.30	29.069144	+ 46031	21 15
12	14 21 27.129	-15.558	+ 3 59 31.16	- 37.57	0.30	29.115175	+ 48977	20 59
16	14 21 11.571	-14.013	+ 3 58 53.59	- 51.69	0.30	29.164152	+ 51684	20 43
20	14 20 57.558	-12.377	+ 3 58 1.90	- 65.63	0.30	29.215836	+ 54127	20 27
24	14 20 45.181	-10.664	+ 3 56 56.27	- 79.33	0.30	29.269963	+ 56294	20 11
28	14 20 34.517	- 8.895	+ 3 55 36.94	- 92.63	0.30	29.326257	+ 58184	19 55

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DATE		RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H M S	S	O ' "	"	"	AU		H M
JULY	2	14 20 25.622	- 7.076	+ 3 54 4.31	-105.57	0.30	29.384441	+ 59817	19 39
	6	14 20 18.546	- 5.210	+ 3 52 18.74	-118.15	0.30	29.444258	+ 61195	19 23
	10	14 20 13.336	- 3.298	+ 3 50 20.59	-130.35	0.30	29.505453	+ 62302	19 7
	14	14 20 10.038	- 1.347	+ 3 48 10.24	-142.11	0.30	29.567755	+ 63122	18 52
	18	14 20 8.691	+ 0.631	+ 3 45 48.13	-153.31	0.30	29.630877	+ 63638	18 36
	22	14 20 9.322	+ 2.621	+ 3 43 14.82	-163.89	0.30	29.694515	+ 63847	18 20
	26	14 20 11.943	+ 4.604	+ 3 40 30.93	-173.76	0.30	29.758362	+ 63764	18 5
	30	14 20 16.547	+ 6.575	+ 3 37 37.17	-182.96	0.29	29.822126	+ 63411	17 49
AUG	3	14 20 23.122	+ 8.535	+ 3 34 34.21	-191.53	0.29	29.885537	+ 62798	17 33
	7	14 20 31.657	+10.482	+ 3 31 22.68	-199.45	0.29	29.948335	+ 61914	17 18
	11	14 20 42.139	+12.407	+ 3 28 3.23	-206.66	0.29	30.010249	+ 60749	17 2
	15	14 20 54.546	+14.301	+ 3 24 36.57	-213.13	0.29	30.070998	+ 59297	16 47
	19	14 21 8.847	+16.149	+ 3 21 3.44	-218.73	0.29	30.130295	+ 57562	16 31
	23	14 21 24.996	+17.937	+ 3 17 24.71	-223.48	0.29	30.187857	+ 55572	16 16
	27	14 21 42.933	+19.661	+ 3 13 41.23	-227.41	0.29	30.243429	+ 53353	16 0
	31	14 22 2.594	+21.324	+ 3 9 53.82	-230.57	0.29	30.296782	+ 50915	15 45
SEPT	4	14 22 23.918	+22.926	+ 3 6 3.25	-232.97	0.29	30.347697	+ 48256	15 30
	8	14 22 46.844	+24.457	+ 3 2 10.28	-234.58	0.29	30.395953	+ 45372	15 14
	12	14 23 11.301	+25.914	+ 2 58 15.70	-235.34	0.29	30.441325	+ 42264	14 59
	16	14 23 37.215	+27.277	+ 2 54 20.36	-235.18	0.29	30.483589	+ 38946	14 44
	20	14 24 4.492	+28.540	+ 2 50 25.18	-234.13	0.29	30.522535	+ 35449	14 28
	24	14 24 33.032	+29.701	+ 2 46 31.05	-232.25	0.29	30.557984	+ 31809	14 13
	28	14 25 2.733	+30.764	+ 2 42 38.80	-229.61	0.29	30.589793	+ 28035	13 58
OCT	2	14 25 33.497	+31.731	+ 2 38 49.19	-226.22	0.29	30.617828	+ 24130	13 43
	6	14 26 5.228	+32.594	+ 2 35 2.97	-222.05	0.29	30.641958	+ 20097	13 27
	10	14 26 37.822	+33.348	+ 2 31 20.92	-217.08	0.29	30.662055	+ 15941	13 12
	14	14 27 11.170	+33.981	+ 2 27 43.84	-211.25	0.29	30.677996	+ 11684	12 57
	18	14 27 45.151	+34.484	+ 2 24 12.59	-204.61	0.29	30.689680	+ 7365	12 42
	22	14 28 19.635	+34.862	+ 2 20 47.98	-197.27	0.29	30.697045	+ 3021	12 27
	26	14 28 54.497	+35.121	+ 2 17 30.71	-189.28	0.29	30.700066	- 1338	12 12
	30	14 29 29.618	+35.262	+ 2 14 21.43	-180.67	0.29	30.698728	- 5708	11 56
NOV	3	14 30 4.880	+35.283	+ 2 11 20.76	-171.43	0.29	30.693020	- 10079	11 41
	7	14 30 40.163	+35.177	+ 2 8 29.33	-161.54	0.29	30.682941	- 14441	11 26
	11	14 31 15.340	+34.936	+ 2 5 47.79	-151.01	0.29	30.668500	- 18771	11 11
	15	14 31 50.276	+34.556	+ 2 3 16.78	-139.87	0.29	30.649729	- 23021	10 56
	19	14 32 24.832	+34.044	+ 2 0 56.91	-128.27	0.29	30.626708	- 27161	10 41
	23	14 32 58.876	+33.412	+ 1 58 48.64	-116.27	0.29	30.599547	- 31179	10 26
	27	14 33 32.288	+32.660	+ 1 56 52.37	-103.92	0.29	30.568368	- 35071	10 10
DEC	1	14 34 4.948	+31.789	+ 1 55 8.45	- 91.22	0.29	30.533297	- 38828	9 55
	5	14 34 36.737	+30.798	+ 1 53 37.23	- 78.17	0.29	30.494469	- 42438	9 40
	9	14 35 7.535	+29.681	+ 1 52 19.06	- 64.81	0.29	30.452031	- 45877	9 25
	13	14 35 37.216	+28.436	+ 1 51 14.25	- 51.18	0.29	30.406154	- 49100	9 10
	17	14 36 5.652	+27.082	+ 1 50 23.07	- 37.49	0.29	30.357054	- 52082	8 54
	21	14 36 32.734	+25.626	+ 1 49 45.58	- 23.77	0.29	30.304972	- 54816	8 39
	25	14 36 58.360	+24.077	+ 1 49 21.81	- 10.09	0.29	30.250156	- 57303	8 24
	29	14 37 22.437	+22.441	+ 1 49 11.72	+ 3.52	0.29	30.192853	- 59542	8 8

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS	
		H	M	S	S	°	'	''	''	''	AU		H	M
JAN	2	14	37	44.878	+20.714	+	1	49	15.24	+ 17.08	0.29	30.133311	- 61521	7 53
	6	14	38	5.592	+18.898	+	1	49	32.32	+ 30.51	0.29	30.071790	- 63222	7 38
	10	14	38	24.490	+17.002	+	1	50	2.83	+ 43.71	0.29	30.008568	- 64608	7 22
	14	14	38	41.492	+15.040	+	1	50	46.54	+ 56.56	0.29	29.943960	- 65666	7 7
	18	14	38	56.532	+13.030	+	1	51	43.10	+ 68.92	0.29	29.878294	- 66398	6 51
	22	14	39	9.562	+10.981	+	1	52	52.02	+ 80.80	0.29	29.811896	- 66818	6 36
	26	14	39	20.543	+ 8.904	+	1	54	12.82	+ 92.16	0.30	29.745078	- 66930	6 20
	30	14	39	29.447	+ 6.795	+	1	55	44.98	+102.98	0.30	29.678148	- 66738	6 5
	3	14	39	36.242	+ 4.665	+	1	57	27.96	+113.24	0.30	29.611410	- 66224	5 49
	7	14	39	40.907	+ 2.521	+	1	59	21.20	+122.78	0.30	29.545186	- 65371	5 33
	11	14	39	43.428	+ 0.386	+	2	1	23.98	+131.51	0.30	29.479815	- 64176	5 18
	15	14	39	43.814	- 1.723	+	2	3	35.49	+139.34	0.30	29.415639	- 62660	5 2
	19	14	39	42.091	- 3.794	+	2	5	54.83	+146.27	0.30	29.352979	- 60846	4 46
	23	14	39	38.297	- 5.819	+	2	8	21.10	+152.30	0.30	29.292133	- 58750	4 30
	27	14	39	32.478	- 7.797	+	2	10	53.40	+157.45	0.30	29.233383	- 56386	4 15
MAR	3	14	39	24.681	- 9.720	+	2	13	30.85	+161.68	0.30	29.176997	- 53747	3 59
	7	14	39	14.961	-11.576	+	2	16	12.53	+164.90	0.30	29.123250	- 50827	3 43
	11	14	39	3.385	-13.344	+	2	18	57.43	+167.00	0.30	29.072423	- 47643	3 27
	15	14	38	50.041	-15.009	+	2	21	44.43	+168.00	0.30	29.024780	- 44223	3 11
	19	14	38	35.032	-16.562	+	2	24	32.43	+167.91	0.30	28.980557	- 40603	2 55
	23	14	38	18.470	-17.997	+	2	27	20.34	+166.77	0.30	28.939954	- 36809	2 39
	27	14	38	0.473	-19.318	+	2	30	7.11	+164.66	0.30	28.903145	- 32860	2 23
	31	14	37	41.155	-20.521	+	2	32	51.77	+161.57	0.30	28.870285	- 28755	2 7
	4	14	37	20.634	-21.592	+	2	35	33.34	+157.43	0.30	28.841530	- 24498	1 51
	8	14	36	59.042	-22.518	+	2	38	10.77	+152.22	0.31	28.817032	- 20117	1 35
	12	14	36	36.524	-23.289	+	2	40	42.99	+145.98	0.31	28.796915	- 15649	1 19
	16	14	36	13.235	-23.903	+	2	43	8.97	+138.78	0.31	28.781266	- 11131	1 3
	20	14	35	49.332	-24.363	+	2	45	27.75	+130.74	0.31	28.770135	- 6593	0 46
	24	14	35	24.969	-24.674	+	2	47	38.49	+121.94	0.31	28.763542	- 2053	0 30
	28	14	35	0.295	-24.841	+	2	49	40.43	+112.41	0.31	28.761489	+ 2490	0 14
MAY	2	14	34	35.454	-24.856	+	2	51	32.84	+102.12	0.31	28.763979	+ 7027	23 54
	6	14	34	10.598	-24.709	+	2	53	14.96	+ 91.08	0.31	28.771006	+ 11526	23 38
	10	14	33	45.889	-24.401	+	2	54	46.04	+ 79.40	0.31	28.782532	+ 15951	23 22
	14	14	33	21.488	-23.938	+	2	56	5.44	+ 67.17	0.31	28.798483	+ 20271	23 6
	18	14	32	57.550	-23.327	+	2	57	12.61	+ 54.52	0.31	28.818754	+ 24457	22 49
	22	14	32	34.223	-22.584	+	2	58	7.13	+ 41.57	0.30	28.843211	+ 28498	22 33
	26	14	32	11.639	-21.713	+	2	58	48.70	+ 28.35	0.30	28.871709	+ 32403	22 17
	30	14	31	49.926	-20.715	+	2	59	17.05	+ 14.82	0.30	28.904112	+ 36163	22 1
	3	14	31	29.211	-19.585	+	2	59	31.87	+ 1.04	0.30	28.940275	+ 39748	21 45
	7	14	31	9.626	-18.329	+	2	59	32.91	- 12.87	0.30	28.980023	+ 43130	21 29
	11	14	30	51.297	-16.959	+	2	59	20.04	- 26.82	0.30	29.023153	+ 46284	21 13
	15	14	30	34.338	-15.490	+	2	58	53.22	- 40.68	0.30	29.069437	+ 49191	20 57
	19	14	30	18.848	-13.936	+	2	58	12.54	- 54.36	0.30	29.118628	+ 51854	20 41
	23	14	30	4.912	-12.307	+	2	57	18.18	- 67.83	0.30	29.170482	+ 54284	20 25
	27	14	29	52.605	-10.603	+	2	56	10.35	- 81.15	0.30	29.224766	+ 56480	20 9

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS		
		H	M	S	S	O	'	"	"	"	AU		H	M	
JULY	1	14	29	42.002	- 8.823	+	2	54	49.20	- 94.23	0.30	29.281246	+	58418	19 53
	5	14	29	33.179	- 6.980	+	2	53	14.97	-107.02	0.30	29.339664	+	60078	19 37
	9	14	29	26.199	- 5.082	+	2	51	27.95	-119.40	0.30	29.399742	+	61444	19 22
	13	14	29	21.117	- 3.149	+	2	49	28.55	-131.25	0.30	29.461186	+	62510	19 6
	17	14	29	17.968	- 1.195	+	2	47	17.30	-142.54	0.30	29.523696	+	63286	18 50
AUG	21	14	29	16.773	+ 0.773	+	2	44	54.76	-153.29	0.30	29.586982	+	63796	18 34
	25	14	29	17.546	+ 2.754	+	2	42	21.47	-163.51	0.30	29.650778	+	64038	18 19
	29	14	29	20.300	+ 4.748	+	2	39	37.96	-173.20	0.30	29.714816	+	64000	18 3
	2	14	29	25.048	+ 6.745	+	2	36	44.76	-182.26	0.30	29.778816	+	63666	17 47
	6	14	29	31.793	+ 8.731	+	2	33	42.50	-190.62	0.29	29.842482	+	63031	17 32
	10	14	29	40.524	+10.693	+	2	30	31.88	-198.21	0.29	29.905513	+	62099	17 16
	14	14	29	51.217	+12.615	+	2	27	13.67	-204.99	0.29	29.967612	+	60892	17 1
	18	14	30	3.832	+14.495	+	2	23	48.68	-211.04	0.29	30.028504	+	59434	16 45
	22	14	30	18.327	+16.334	+	2	20	17.64	-216.38	0.29	30.087938	+	57735	16 30
	26	14	30	34.661	+18.132	+	2	16	41.26	-220.99	0.29	30.145673	+	55780	16 14
SEPT	30	14	30	52.793	+19.878	+	2	13	0.27	-224.84	0.29	30.201453	+	53568	15 59
	3	14	31	12.671	+21.562	+	2	9	15.43	-227.84	0.29	30.255021	+	51098	15 43
	7	14	31	34.233	+23.170	+	2	5	27.59	-229.95	0.29	30.306119	+	48384	15 28
	11	14	31	57.403	+24.693	+	2	1	37.64	-231.19	0.29	30.354503	+	45457	15 13
	15	14	32	22.096	+26.127	+	1	57	46.45	-231.62	0.29	30.399960	+	42346	14 57
OCT	19	14	32	48.223	+27.480	+	1	53	54.83	-231.30	0.29	30.442306	+	39058	14 42
	23	14	33	15.703	+28.749	+	1	50	3.53	-230.22	0.29	30.481364	+	35592	14 27
	27	14	33	44.452	+29.925	+	1	46	13.31	-228.33	0.29	30.516956	+	31947	14 11
	1	14	34	14.377	+31.002	+	1	42	24.98	-225.60	0.29	30.548903	+	28132	13 56
	5	14	34	45.379	+31.966	+	1	38	39.38	-222.00	0.29	30.577035	+	24169	13 41
	9	14	35	17.345	+32.809	+	1	34	57.38	-217.56	0.29	30.601204	+	20094	13 26
	13	14	35	50.154	+33.536	+	1	31	19.82	-212.38	0.29	30.621298	+	15941	13 11
	17	14	36	23.690	+34.151	+	1	27	47.44	-206.53	0.29	30.637239	+	11716	12 55
	21	14	36	57.841	+34.655	+	1	24	20.91	-199.98	0.29	30.648955	+	7423	12 40
	25	14	37	32.496	+35.042	+	1	21	0.93	-192.73	0.29	30.656378	+	3068	12 25
NOV	29	14	38	7.538	+35.305	+	1	17	48.20	-184.76	0.29	30.659446	-	1334	12 10
	2	14	38	42.843	+35.432	+	1	14	43.44	-176.05	0.29	30.658112	-	5759	11 55
	6	14	39	18.275	+35.424	+	1	11	47.39	-166.68	0.29	30.652353	-	10161	11 40
	10	14	39	53.699	+35.283	+	1	9	0.71	-156.75	0.29	30.642192	-	14511	11 25
	14	14	40	28.982	+35.021	+	1	6	23.96	-146.34	0.29	30.627681	-	18800	11 9
DEC	18	14	41	4.003	+34.636	+	1	3	57.62	-135.46	0.29	30.608881	-	23024	10 54
	22	14	41	38.639	+34.127	+	1	1	42.16	-124.08	0.29	30.585857	-	27171	10 39
	26	14	42	12.766	+33.490	+	0	59	38.08	-112.24	0.29	30.558686	-	31229	10 24
	30	14	42	46.256	+32.717	+	0	57	45.84	- 99.93	0.29	30.527457	-	35165	10 9
	4	14	43	18.973	+31.810	+	0	56	5.91	- 87.26	0.29	30.492292	-	38938	9 54
	8	14	43	50.783	+30.781	+	0	54	38.65	- 74.36	0.29	30.453354	-	42521	9 38
	12	14	44	21.564	+29.640	+	0	53	24.29	- 61.29	0.29	30.410833	-	45908	9 23
	16	14	44	51.204	+28.392	+	0	52	23.00	- 48.09	0.29	30.364925	-	49097	9 8
	20	14	45	19.596	+27.037	+	0	51	34.91	- 34.77	0.29	30.315828	-	52083	8 53
	24	14	45	46.633	+25.573	+	0	51	0.14	- 21.33	0.29	30.263745	-	54848	8 37
	28	14	46	12.206	+24.001	+	0	50	38.81	- 7.83	0.29	30.208897	-	57369	8 22

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS		
		H	M	S	S	O	'	"	"	"	AU		H M		
JAN	1	14	46	36.207	+22.326	+	0	50	30.98	+	5.61	0.29	30.151528	- 59606	8 7
	5	14	46	58.533	+20.565	+	0	50	36.59	+	18.85	0.29	30.091922	- 61543	7 51
	9	14	47	19.098	+18.733	+	0	50	55.44	+	31.82	0.29	30.030379	- 63184	7 36
	13	14	47	37.831	+16.835	+	0	51	27.26	+	44.49	0.29	29.967195	- 64533	7 21
	17	14	47	54.666	+14.878	+	0	52	11.75	+	56.86	0.29	29.902662	- 65592	7 5
	21	14	48	9.544	+12.863	+	0	53	8.61	+	68.87	0.29	29.837070	- 66354	6 50
	25	14	48	22.407	+10.794	+	0	54	17.48	+	80.50	0.30	29.770716	- 66797	6 34
	29	14	48	33.201	+ 8.683	+	0	55	37.98	+	91.59	0.30	29.703919	- 66899	6 19
	FEB	2	14	48	41.884	+ 6.550	+	0	57	9.57	+102.03	0.30	29.637020	- 66654	6 3
		6	14	48	48.434	+ 4.413	+	0	58	51.60	+111.74	0.30	29.570366	- 66080	5 47
10		14	48	52.847	+ 2.280	+	1	0	43.34	+120.73	0.30	29.504286	- 65196	5 32	
14		14	48	55.127	+ 0.159	+	1	2	44.07	+128.99	0.30	29.439090	- 64009	5 16	
18		14	48	55.286	- 1.948	+	1	4	53.06	+136.51	0.30	29.375081	- 62524	5 0	
	22	14	48	53.338	- 4.034	+	1	7	9.57	+143.23	0.30	29.312557	- 60732	4 45	
	26	14	48	49.304	- 6.081	+	1	9	32.80	+149.04	0.30	29.251825	- 58622	4 29	
	MAR	2	14	48	43.223	- 8.072	+	1	12	1.84	+153.82	0.30	29.193203	- 56205	4 13
		6	14	48	35.151	- 9.987	+	1	14	35.66	+157.59	0.30	29.136998	- 53514	3 57
		10	14	48	25.164	-11.821	+	1	17	13.25	+160.35	0.30	29.083484	- 50575	3 41
14		14	48	13.343	-13.566	+	1	19	53.60	+162.14	0.30	29.032909	- 47409	3 25	
18		14	47	59.777	-15.222	+	1	22	35.74	+162.97	0.30	28.985500	- 44029	3 9	
	22	14	47	44.555	-16.782	+	1	25	18.71	+162.83	0.30	28.941471	- 40432	2 53	
	26	14	47	27.773	-18.232	+	1	28	1.54	+161.62	0.30	28.901039	- 36623	2 37	
	30	14	47	9.541	-19.553	+	1	30	43.16	+159.30	0.30	28.864416	- 32625	2 21	
	APR	3	14	46	49.988	-20.737	+	1	33	22.46	+155.92	0.31	28.831791	- 28478	2 5
		7	14	46	29.251	-21.776	+	1	35	58.38	+151.53	0.31	28.803313	- 24216	1 49
11		14	46	7.475	-22.675	+	1	38	29.91	+146.23	0.31	28.779097	- 19866	1 33	
15		14	45	44.800	-23.433	+	1	40	56.14	+140.07	0.31	28.759231	- 15442	1 17	
19		14	45	21.367	-24.052	+	1	43	16.21	+133.04	0.31	28.743789	- 10947	1 1	
	23	14	44	57.315	-24.519	+	1	45	29.25	+125.13	0.31	28.732842	- 6389	0 45	
	27	14	44	32.796	-24.825	+	1	47	34.38	+116.30	0.31	28.726453	- 1803	0 29	
	MAY	1	14	44	7.971	-24.966	+	1	49	30.68	+106.69	0.31	28.724650	+ 2772	0 12
		5	14	43	43.005	-24.944	+	1	51	17.37	+ 96.39	0.31	28.727422	+ 7303	23 52
		9	14	43	18.061	-24.769	+	1	52	53.76	+ 85.50	0.31	28.734725	+ 11766	23 36
13		14	42	53.292	-24.451	+	1	54	19.26	+ 74.12	0.31	28.746491	+ 16146	23 20	
17		14	42	28.841	-23.993	+	1	55	33.38	+ 62.26	0.31	28.762637	+ 20449	23 4	
	21	14	42	4.848	-23.388	+	1	56	35.64	+ 49.89	0.31	28.783086	+ 24660	22 48	
	25	14	41	41.460	-22.633	+	1	57	25.53	+ 37.07	0.31	28.807746	+ 28750	22 32	
	29	14	41	18.827	-21.734	+	1	58	2.60	+ 23.94	0.30	28.836496	+ 32682	22 16	
	JUNE	2	14	40	57.093	-20.701	+	1	58	26.54	+ 10.57	0.30	28.869178	+ 36427	21 59
		6	14	40	36.392	-19.546	+	1	58	37.11	- 2.87	0.30	28.905605	+ 39974	21 43
10		14	40	16.846	-18.284	+	1	58	34.24	- 16.35	0.30	28.945579	+ 43314	21 27	
14		14	39	58.562	-16.921	+	1	58	17.89	- 29.82	0.30	28.988893	+ 46460	21 11	
18		14	39	41.641	-15.457	+	1	57	48.07	- 43.33	0.30	29.035353	+ 49402	20 55	
	22	14	39	26.184	-13.890	+	1	57	4.74	- 56.79	0.30	29.084755	+ 52112	20 39	
	26	14	39	12.294	-12.232	+	1	56	7.95	- 70.11	0.30	29.136867	+ 54563	20 23	
	30	14	39	0.062	-10.495	+	1	54	57.84	- 83.15	0.30	29.191430	+ 56741	20 7	

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DATE		RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
		H M S	S	O ' "	"	"	AU		H M
JULY	4	14 38 49.567	- 8.697	+ 1 53 34.69	- 95.85	0.30	29.248171	+ 58637	19 52
	8	14 38 40.870	- 6.851	+ 1 51 58.84	-108.13	0.30	29.306808	+ 60259	19 36
	12	14 38 34.019	- 4.964	+ 1 50 10.71	-120.01	0.30	29.367067	+ 61625	19 20
	16	14 38 29.055	- 3.035	+ 1 48 10.70	-131.52	0.30	29.428692	+ 62729	19 4
	20	14 38 26.020	- 1.067	+ 1 45 59.18	-142.62	0.30	29.491421	+ 63551	18 48
AUG	24	14 38 24.953	+ 0.929	+ 1 43 36.56	-153.18	0.30	29.554972	+ 64073	18 33
	28	14 38 25.882	+ 2.939	+ 1 41 3.38	-163.13	0.30	29.619045	+ 64289	18 17
	1	14 38 28.821	+ 4.946	+ 1 38 20.25	-172.42	0.30	29.683334	+ 64205	18 1
	5	14 38 33.767	+ 6.938	+ 1 35 27.83	-180.99	0.30	29.747539	+ 63835	17 46
	9	14 38 40.705	+ 8.912	+ 1 32 26.84	-188.91	0.29	29.811374	+ 63202	17 30
	13	14 38 49.617	+10.868	+ 1 29 17.93	-196.23	0.29	29.874576	+ 62310	17 14
	17	14 39 0.485	+12.805	+ 1 26 1.70	-202.87	0.29	29.936886	+ 61139	16 59
	21	14 39 13.290	+14.711	+ 1 22 38.83	-208.77	0.29	29.998025	+ 59684	16 43
	25	14 39 28.001	+16.571	+ 1 19 10.06	-213.88	0.29	30.057709	+ 57947	16 28
	29	14 39 44.572	+18.375	+ 1 15 36.18	-218.14	0.29	30.115656	+ 55941	16 12
SEPT	2	14 40 2.947	+20.111	+ 1 11 58.04	-221.56	0.29	30.171597	+ 53693	15 57
	6	14 40 23.058	+21.777	+ 1 8 16.48	-224.22	0.29	30.225290	+ 51226	15 42
	10	14 40 44.835	+23.378	+ 1 4 32.26	-226.16	0.29	30.276516	+ 48548	15 26
	14	14 41 8.213	+24.912	+ 1 0 46.10	-227.35	0.29	30.325064	+ 45648	15 11
	18	14 41 33.125	+26.367	+ 0 56 58.75	-227.71	0.29	30.370712	+ 42526	14 56
	22	14 41 59.492	+27.733	+ 0 53 11.04	-227.23	0.29	30.413238	+ 39194	14 40
	26	14 42 27.225	+28.998	+ 0 49 23.81	-225.86	0.29	30.452432	+ 35670	14 25
	30	14 42 56.223	+30.157	+ 0 45 37.95	-223.67	0.29	30.488102	+ 31991	14 10
	4	14 43 26.380	+31.209	+ 0 41 54.28	-220.72	0.29	30.520093	+ 28181	13 55
	8	14 43 57.589	+32.161	+ 0 38 13.56	-217.08	0.29	30.548274	+ 24252	13 39
OCT	12	14 44 29.750	+33.010	+ 0 34 36.48	-212.70	0.29	30.572526	+ 20197	13 24
	16	14 45 2.760	+33.750	+ 0 31 3.78	-207.57	0.29	30.592723	+ 16024	13 9
	20	14 45 36.510	+34.369	+ 0 27 36.21	-201.64	0.29	30.608747	+ 11750	12 54
	24	14 46 10.879	+34.860	+ 0 24 14.57	-194.93	0.29	30.620497	+ 7402	12 39
	28	14 46 45.739	+35.217	+ 0 20 59.64	-187.52	0.29	30.627899	+ 3019	12 24
NOV	1	14 47 20.956	+35.449	+ 0 17 52.12	-179.49	0.29	30.630918	- 1370	12 8
	5	14 47 56.405	+35.561	+ 0 14 52.63	-170.90	0.29	30.629548	- 5757	11 53
	9	14 48 31.966	+35.551	+ 0 12 1.73	-161.74	0.29	30.623791	- 10141	11 38
	13	14 49 7.517	+35.415	+ 0 9 19.99	-151.99	0.29	30.613650	- 14511	11 23
	17	14 49 42.932	+35.148	+ 0 6 48.00	-141.64	0.29	30.599139	- 18846	11 8
	21	14 50 18.080	+34.740	+ 0 4 26.36	-130.74	0.29	30.580293	- 23116	10 53
	25	14 50 52.820	+34.194	+ 0 2 15.62	-119.37	0.29	30.557177	- 27278	10 38
	29	14 51 27.014	+33.521	+ 0 0 16.25	-107.66	0.29	30.529899	- 31308	10 22
	3	14 52 0.535	+32.728	- 0 1 31.41	- 95.65	0.29	30.498591	- 35197	10 7
	7	14 52 33.263	+31.819	- 0 3 7.06	- 83.35	0.29	30.463394	- 38948	9 52
DEC	11	14 53 5.082	+30.789	- 0 4 30.41	- 70.77	0.29	30.424446	- 42545	9 37
	15	14 53 35.871	+29.637	- 0 5 41.18	- 57.93	0.29	30.381901	- 45969	9 22
	19	14 54 5.508	+28.361	- 0 6 39.11	- 44.86	0.29	30.335932	- 49193	9 6
	23	14 54 33.869	+26.965	- 0 7 23.97	- 31.70	0.29	30.286739	- 52174	8 51
	27	14 55 0.834	+25.468	- 0 7 55.67	- 18.59	0.29	30.234565	- 54896	8 36
	31	14 55 26.302	+23.879	- 0 8 14.26	- 5.57	0.29	30.179669	- 57361	8 21

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O I ''	''	''	AU		H M
JAN 4	14 55 50.181	+22.203	- 0 8 19.83	+ 7.35	0.29	30.122308	- 59570	8 5
8	14 56 12.384	+20.443	- 0 8 12.48	+ 20.16	0.29	30.062738	- 61517	7 50
12	14 56 32.827	+18.601	- 0 7 52.32	+ 32.80	0.29	30.001221	- 63189	7 34
16	14 56 51.428	+16.676	- 0 7 19.52	+ 45.23	0.29	29.938032	- 64559	7 19
20	14 57 8.104	+14.683	- 0 6 34.29	+ 57.30	0.29	29.873473	- 65601	7 4
24	14 57 22.787	+12.642	- 0 5 36.99	+ 68.87	0.30	29.807872	- 66307	6 48
28	14 57 35.429	+10.566	- 0 4 28.12	+ 79.91	0.30	29.741565	- 66691	6 33
FEB 1	14 57 45.995	+ 8.463	- 0 3 8.21	+ 90.44	0.30	29.674874	- 66768	6 17
5	14 57 54.458	+ 6.339	- 0 1 37.77	+100.40	0.30	29.608106	- 66536	6 1
9	14 58 0.797	+ 4.197	+ 0 0 2.63	+109.79	0.30	29.541570	- 65991	5 46
13	14 58 4.994	+ 2.044	+ 0 1 52.42	+118.53	0.30	29.475579	- 65122	5 30
17	14 58 7.038	- 0.104	+ 0 3 50.95	+126.47	0.30	29.410457	- 63912	5 14
21	14 58 6.934	- 2.225	+ 0 5 57.42	+133.54	0.30	29.346545	- 62370	4 59
25	14 58 4.709	- 4.303	+ 0 8 10.96	+139.72	0.30	29.284175	- 60525	4 43
29	14 58 0.406	- 6.331	+ 0 10 30.68	+145.01	0.30	29.223650	- 58400	4 27
MAR 4	14 57 54.075	- 8.304	+ 0 12 55.69	+149.45	0.30	29.165250	- 56005	4 11
8	14 57 45.771	-10.217	+ 0 15 25.14	+153.00	0.30	29.109245	- 53348	3 55
12	14 57 35.554	-12.061	+ 0 17 58.14	+155.63	0.30	29.055897	- 50424	3 40
16	14 57 23.493	-13.824	+ 0 20 33.77	+157.23	0.30	29.005473	- 47235	3 24
20	14 57 9.669	-15.481	+ 0 23 11.00	+157.74	0.30	28.958238	- 43802	3 8
24	14 56 54.188	-17.020	+ 0 25 48.74	+157.21	0.30	28.914436	- 40164	2 52
28	14 56 37.168	-18.441	+ 0 28 25.95	+155.69	0.30	28.874272	- 36353	2 36
APR 1	14 56 18.727	-19.738	+ 0 31 1.64	+153.24	0.30	28.837919	- 32388	2 20
5	14 55 58.989	-20.914	+ 0 33 34.88	+149.87	0.31	28.805531	- 28281	2 4
9	14 55 38.075	-21.961	+ 0 36 4.75	+145.57	0.31	28.777250	- 24034	1 48
13	14 55 16.114	-22.867	+ 0 38 30.32	+140.27	0.31	28.753216	- 19659	1 31
17	14 54 53.247	-23.619	+ 0 40 50.59	+134.00	0.31	28.733557	- 15187	1 15
21	14 54 29.628	-24.208	+ 0 43 4.59	+126.81	0.31	28.718370	- 10661	0 59
25	14 54 5.420	-24.641	+ 0 45 11.40	+118.84	0.31	28.707709	- 6114	0 43
29	14 53 40.779	-24.921	+ 0 47 10.24	+110.15	0.31	28.701595	- 1568	0 27
MAY 3	14 53 15.858	-25.053	+ 0 49 0.39	+100.79	0.31	28.700027	+ 2968	0 11
7	14 52 50.805	-25.039	+ 0 50 41.18	+ 90.80	0.31	28.702995	+ 7488	23 51
11	14 52 25.766	-24.869	+ 0 52 11.98	+ 80.11	0.31	28.710483	+ 11980	23 34
15	14 52 0.897	-24.536	+ 0 53 32.09	+ 68.80	0.31	28.722463	+ 16409	23 18
19	14 51 36.361	-24.046	+ 0 54 40.89	+ 56.98	0.31	28.738872	+ 20735	23 2
23	14 51 12.315	-23.406	+ 0 55 37.87	+ 44.79	0.31	28.759607	+ 24927	22 46
27	14 50 48.909	-22.629	+ 0 56 22.66	+ 32.32	0.31	28.784534	+ 28976	22 30
31	14 50 26.280	-21.725	+ 0 56 54.98	+ 19.62	0.31	28.813510	+ 32871	22 14
JUNE 4	14 50 4.555	-20.699	+ 0 57 14.60	+ 6.70	0.30	28.846381	+ 36616	21 58
8	14 49 43.856	-19.547	+ 0 57 21.30	- 6.43	0.30	28.882997	+ 40199	21 42
12	14 49 24.309	-18.268	+ 0 57 14.87	- 19.72	0.30	28.923196	+ 43588	21 26
16	14 49 6.041	-16.873	+ 0 56 55.15	- 33.01	0.30	28.966784	+ 46750	21 10
20	14 48 49.168	-15.376	+ 0 56 22.14	- 46.21	0.30	29.013534	+ 49669	20 54
24	14 48 33.792	-13.792	+ 0 55 35.93	- 59.23	0.30	29.063203	+ 52336	20 38
28	14 48 20.000	-12.133	+ 0 54 36.70	- 72.02	0.30	29.115539	+ 54758	20 22

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET	TRANS	
		H	M	S	S	O	I	II	III	IV	AU		H	M	
JULY	2	14	48	7.867	-10.406	+	0	53	24.68	- 84.57	0.30	29.170297	+	56942	20 6
	6	14	47	57.461	- 8.608	+	0	52	0.11	- 96.94	0.30	29.227239	+	58882	19 50
	10	14	47	48.853	- 6.745	+	0	50	23.17	-109.00	0.30	29.286121	+	60548	19 34
	14	14	47	42.108	- 4.825	+	0	48	34.17	-120.66	0.30	29.346669	+	61922	19 18
	18	14	47	37.283	- 2.869	+	0	46	33.51	-131.83	0.30	29.408591	+	62996	19 2
	22	14	47	34.414	- 0.889	+	0	44	21.68	-142.46	0.30	29.471587	+	63774	18 47
	26	14	47	33.525	+ 1.103	+	0	41	59.22	-152.49	0.30	29.535361	+	64268	18 31
	30	14	47	34.628	+ 3.100	+	0	39	26.73	-162.01	0.30	29.599629	+	64496	18 15
	3	14	47	37.728	+ 5.108	+	0	36	44.72	-170.99	0.30	29.664125	+	64453	18 0
	7	14	47	42.836	+ 7.119	+	0	33	53.73	-179.41	0.30	29.728578	+	64120	17 44
AUG	11	14	47	49.955	+ 9.120	+	0	30	54.32	-187.13	0.30	29.792698	+	63485	17 28
	15	14	47	59.075	+11.100	+	0	27	47.19	-194.12	0.29	29.856183	+	62552	17 13
	19	14	48	10.175	+13.041	+	0	24	33.07	-200.33	0.29	29.918735	+	61333	16 57
	23	14	48	23.216	+14.936	+	0	21	12.74	-205.78	0.29	29.980068	+	59849	16 42
	27	14	48	38.152	+16.783	+	0	17	46.96	-210.53	0.29	30.039917	+	58123	16 26
SEPT	31	14	48	54.935	+18.584	+	0	14	16.43	-214.61	0.29	30.098040	+	56155	16 11
	4	14	49	13.519	+20.336	+	0	10	41.82	-217.93	0.29	30.154195	+	53932	15 55
	8	14	49	33.855	+22.026	+	0	7	3.89	-220.47	0.29	30.208127	+	51449	15 40
	12	14	49	55.881	+23.641	+	0	3	23.42	-222.15	0.29	30.259576	+	48721	15 25
	16	14	50	19.522	+25.171	-	0	0	18.73	-222.99	0.29	30.308297	+	45768	15 9
	20	14	50	44.693	+26.608	-	0	4	1.72	-223.01	0.29	30.354065	+	42617	14 54
	24	14	51	11.301	+27.954	-	0	7	44.73	-222.29	0.29	30.396682	+	39295	14 39
	28	14	51	39.255	+29.213	-	0	11	27.02	-220.87	0.29	30.435977	+	35805	14 23
	2	14	52	8.468	+30.383	-	0	15	7.89	-218.69	0.29	30.471782	+	32140	14 8
	6	14	52	38.851	+31.450	-	0	18	46.58	-215.71	0.29	30.503922	+	28304	13 53
OCT	10	14	53	10.301	+32.407	-	0	22	22.29	-211.91	0.29	30.532226	+	24319	13 38
	14	14	53	42.708	+33.242	-	0	25	54.20	-207.32	0.29	30.556545	+	20211	13 23
	18	14	54	15.950	+33.954	-	0	29	21.52	-201.97	0.29	30.576756	+	16014	13 7
	22	14	54	49.904	+34.546	-	0	32	43.49	-195.98	0.29	30.592770	+	11754	12 52
	26	14	55	24.450	+35.025	-	0	35	59.47	-189.38	0.29	30.604524	+	7440	12 37
NOV	30	14	55	59.475	+35.388	-	0	39	8.85	-182.11	0.29	30.611964	+	3067	12 22
	3	14	56	34.863	+35.626	-	0	42	10.96	-174.18	0.29	30.615031	-	1352	12 7
	7	14	57	10.489	+35.730	-	0	45	5.14	-165.57	0.29	30.613679	-	5792	11 52
	11	14	57	46.219	+35.697	-	0	47	50.71	-156.34	0.29	30.607887	-	10223	11 37
	15	14	58	21.916	+35.526	-	0	50	27.05	-146.56	0.29	30.597664	-	14605	11 21
DEC	19	14	58	57.442	+35.225	-	0	52	53.61	-136.34	0.29	30.583059	-	18914	11 6
	23	14	59	32.667	+34.801	-	0	55	9.95	-125.72	0.29	30.564145	-	23143	10 51
	27	15	0	7.468	+34.256	-	0	57	15.67	-114.67	0.29	30.541002	-	27292	10 36
	1	15	0	41.724	+33.582	-	0	59	10.34	-103.21	0.29	30.513710	-	31349	10 21
	5	15	1	15.306	+32.775	-	1	0	53.55	- 91.34	0.29	30.482361	-	35282	10 6
	9	15	1	48.081	+31.835	-	1	2	24.89	- 79.14	0.29	30.447079	-	39065	9 50
	13	15	2	19.916	+30.764	-	1	3	44.03	- 66.73	0.29	30.408014	-	42657	9 35
	17	15	2	50.680	+29.579	-	1	4	50.76	- 54.19	0.29	30.365357	-	46040	9 20
	21	15	3	20.259	+28.287	-	1	5	44.95	- 41.60	0.29	30.319317	-	49212	9 5
	25	15	3	48.546	+26.892	-	1	6	26.55	- 28.93	0.29	30.270105	-	52176	8 50
	29	15	4	15.438	+25.393	-	1	6	55.48	- 16.19	0.29	30.217929	-	54917	8 34

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	° ' "	"	"	AU		H M
JAN 2	15 4 40.831	+23.787	- 1 7 11.67	- 3.45	0.29	30.163012	- 57416	8 19
6	15 5 4.618	+22.081	- 1 7 15.12	+ 9.23	0.29	30.105596	- 59642	8 4
10	15 5 26.699	+20.283	- 1 7 5.89	+ 21.70	0.29	30.045954	- 61569	7 48
14	15 5 46.982	+18.411	- 1 6 44.19	+ 33.88	0.29	29.984385	- 63184	7 33
18	15 6 5.393	+16.480	- 1 6 10.31	+ 45.71	0.29	29.921201	- 64499	7 17
22	15 6 21.873	+14.493	- 1 5 24.60	+ 57.20	0.29	29.856702	- 65521	7 2
26	15 6 36.366	+12.455	- 1 4 27.40	+ 68.33	0.30	29.791181	- 66245	6 46
30	15 6 48.821	+10.368	- 1 3 19.07	+ 79.04	0.30	29.724936	- 66658	6 31
FEB 3	15 6 59.189	+ 8.240	- 1 2 0.03	+ 89.25	0.30	29.658278	- 66743	6 15
7	15 7 7.429	+ 6.085	- 1 0 30.78	+ 98.84	0.30	29.591535	- 66480	6 0
11	15 7 13.514	+ 3.927	- 0 58 51.94	+107.71	0.30	29.525055	- 65875	5 44
15	15 7 17.441	+ 1.781	- 0 57 4.23	+115.82	0.30	29.459180	- 64954	5 29
19	15 7 19.222	- 0.351	- 0 55 8.41	+123.24	0.30	29.394226	- 63732	5 13
23	15 7 18.871	- 2.459	- 0 53 5.17	+129.92	0.30	29.330494	- 62214	4 57
27	15 7 16.412	- 4.542	- 0 50 55.25	+135.84	0.30	29.268280	- 60398	4 41
MAR 3	15 7 11.870	- 6.586	- 0 48 39.41	+140.90	0.30	29.207882	- 58279	4 26
7	15 7 5.284	- 8.578	- 0 46 18.51	+145.04	0.30	29.149603	- 55853	4 10
11	15 6 56.706	-10.493	- 0 43 53.47	+148.15	0.30	29.093750	- 53138	3 54
15	15 6 46.213	-12.318	- 0 41 25.32	+150.31	0.30	29.040612	- 50175	3 38
19	15 6 33.895	-14.052	- 0 38 55.01	+151.54	0.30	28.990437	- 46987	3 22
23	15 6 19.843	-15.690	- 0 36 23.47	+151.86	0.30	28.943450	- 43586	3 6
27	15 6 4.153	-17.228	- 0 33 51.61	+151.27	0.30	28.899864	- 39983	2 50
31	15 5 46.925	-18.658	- 0 31 20.34	+149.72	0.30	28.859881	- 36179	2 34
APR 4	15 5 28.267	-19.965	- 0 28 50.62	+147.15	0.31	28.823702	- 32182	2 18
8	15 5 8.302	-21.130	- 0 26 23.47	+143.55	0.31	28.791520	- 28023	2 2
12	15 4 47.172	-22.148	- 0 23 59.92	+139.01	0.31	28.763497	- 23749	1 46
16	15 4 25.024	-23.021	- 0 21 40.91	+133.62	0.31	28.739748	- 19389	1 30
20	15 4 2.003	-23.749	- 0 19 27.29	+127.41	0.31	28.720359	- 14957	1 14
24	15 3 38.254	-24.335	- 0 17 19.88	+120.43	0.31	28.705402	- 10467	0 58
28	15 3 13.919	-24.775	- 0 15 19.45	+112.66	0.31	28.694935	- 5923	0 41
MAY 2	15 2 49.144	-25.058	- 0 13 26.79	+104.07	0.31	28.689012	- 1342	0 25
6	15 2 24.086	-25.174	- 0 11 42.72	+ 94.71	0.31	28.687670	+ 3240	0 9
10	15 1 58.912	-25.125	- 0 10 8.01	+ 84.72	0.31	28.690910	+ 7779	23 49
14	15 1 33.787	-24.920	- 0 8 43.29	+ 74.19	0.31	28.698689	+ 12248	23 33
18	15 1 8.867	-24.567	- 0 7 29.10	+ 63.20	0.31	28.710937	+ 16633	23 17
22	15 0 44.300	-24.074	- 0 6 25.90	+ 51.81	0.31	28.727570	+ 20928	23 1
26	15 0 20.226	-23.442	- 0 5 34.09	+ 40.00	0.31	28.748498	+ 25127	22 44
30	14 59 56.784	-22.665	- 0 4 54.09	+ 27.78	0.31	28.773625	+ 29213	22 28
JUNE 3	14 59 34.119	-21.740	- 0 4 26.31	+ 15.24	0.31	28.802838	+ 33155	22 12
7	14 59 12.379	-20.679	- 0 4 11.07	+ 2.52	0.30	28.835993	+ 36912	21 56
11	14 58 51.700	-19.494	- 0 4 8.55	- 10.28	0.30	28.872905	+ 40466	21 40
15	14 58 32.206	-18.201	- 0 4 18.83	- 23.09	0.30	28.913371	+ 43813	21 24
19	14 58 14.005	-16.806	- 0 4 41.92	- 35.85	0.30	28.957184	+ 46951	21 8
23	14 57 57.199	-15.317	- 0 5 17.77	- 48.59	0.30	29.004135	+ 49882	20 52
27	14 57 41.882	-13.731	- 0 6 6.36	- 61.28	0.30	29.054017	+ 52595	20 36

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DATE		RA (1950.0)			DIFF	DEC (1950.0)			DIFF	HP	TRUE DIST	DIFF	ET TRANS	
		H	M	S	S	°	'	"	"	"	AU		H	M
JULY	1	14	57	28.151	-12.051	- 0	7	7.64	- 73.83	0.30	29.106612	+ 55059	20	20
	5	14	57	16.100	-10.288	- 0	8	21.47	- 86.14	0.30	29.161671	+ 57247	20	4
	9	14	57	5.812	- 8.464	- 0	9	47.61	- 98.07	0.30	29.218918	+ 59152	19	48
	13	14	56	57.348	- 6.589	- 0	11	25.68	-109.61	0.30	29.278070	+ 60777	19	32
	17	14	56	50.759	- 4.676	- 0	13	15.29	-120.74	0.30	29.338847	+ 62131	19	17
AUG	21	14	56	46.083	- 2.728	- 0	15	16.03	-131.45	0.30	29.400978	+ 63223	19	1
	25	14	56	43.355	- 0.745	- 0	17	27.48	-141.78	0.30	29.464201	+ 64046	18	45
	29	14	56	42.610	+ 1.268	- 0	19	49.26	-151.60	0.30	29.528247	+ 64575	18	29
	2	14	56	43.878	+ 3.298	- 0	22	20.86	-160.85	0.30	29.592822	+ 64796	18	14
	6	14	56	47.176	+ 5.327	- 0	25	1.71	-169.44	0.30	29.657618	+ 64711	17	58
	10	14	56	52.503	+ 7.342	- 0	27	51.15	-177.35	0.30	29.722329	+ 64333	17	42
	14	14	56	59.845	+ 9.334	- 0	30	48.50	-184.59	0.30	29.786662	+ 63678	17	27
	18	14	57	9.179	+11.300	- 0	33	53.09	-191.21	0.29	29.850340	+ 62763	17	11
	22	14	57	20.479	+13.245	- 0	37	4.30	-197.21	0.29	29.913103	+ 61585	16	56
	26	14	57	33.724	+15.161	- 0	40	21.51	-202.52	0.29	29.974688	+ 60124	16	40
SEPT	30	14	57	48.885	+17.033	- 0	43	44.03	-207.06	0.29	30.034812	+ 58378	16	25
	3	14	58	5.918	+18.848	- 0	47	11.09	-210.78	0.29	30.093190	+ 56358	16	9
	7	14	58	24.766	+20.596	- 0	50	41.87	-213.71	0.29	30.149548	+ 54085	15	54
	11	14	58	45.362	+22.269	- 0	54	15.58	-215.87	0.29	30.203633	+ 51582	15	38
	15	14	59	7.631	+23.868	- 0	57	51.45	-217.31	0.29	30.255215	+ 48870	15	23
OCT	19	14	59	31.499	+25.397	- 1	1	28.76	-218.05	0.29	30.304085	+ 45951	15	8
	23	14	59	56.896	+26.851	- 1	5	6.81	-218.03	0.29	30.350036	+ 42811	14	52
	27	15	0	23.747	+28.214	- 1	8	44.84	-217.19	0.29	30.392847	+ 39456	14	37
	1	15	0	51.961	+29.478	- 1	12	22.03	-215.54	0.29	30.432303	+ 35908	14	22
	5	15	1	21.439	+30.633	- 1	15	57.57	-213.07	0.29	30.468211	+ 32193	14	7
	9	15	1	52.072	+31.675	- 1	19	30.64	-209.87	0.29	30.500404	+ 28338	13	51
	13	15	2	23.747	+32.609	- 1	23	0.51	-205.98	0.29	30.528742	+ 24371	13	36
	17	15	2	56.356	+33.438	- 1	26	26.49	-201.44	0.29	30.553113	+ 20293	13	21
	21	15	3	29.794	+34.160	- 1	29	47.93	-196.20	0.29	30.573406	+ 16098	13	6
	25	15	4	3.954	+34.761	- 1	33	4.13	-190.21	0.29	30.589504	+ 11802	12	51
NOV	29	15	4	38.715	+35.232	- 1	36	14.34	-183.51	0.29	30.601306	+ 7428	12	36
	2	15	5	13.947	+35.571	- 1	39	17.85	-176.13	0.29	30.608734	+ 3011	12	20
	6	15	5	49.518	+35.774	- 1	42	13.98	-168.14	0.29	30.611745	- 1419	12	5
	10	15	6	25.292	+35.850	- 1	45	2.12	-159.64	0.29	30.610326	- 5833	11	50
	14	15	7	1.142	+35.807	- 1	47	41.76	-150.65	0.29	30.604493	- 10229	11	35
	18	15	7	36.949	+35.638	- 1	50	12.41	-141.12	0.29	30.594264	- 14609	11	20
	22	15	8	12.587	+35.337	- 1	52	33.53	-131.07	0.29	30.579655	- 18955	11	5
	26	15	8	47.924	+34.898	- 1	54	44.60	-120.51	0.29	30.560700	- 23234	10	50
	30	15	9	22.822	+34.319	- 1	56	45.11	-109.53	0.29	30.537466	- 27415	10	34
	4	15	9	57.141	+33.606	- 1	58	34.64	- 98.22	0.29	30.510051	- 31465	10	19
DEC	8	15	10	30.747	+32.768	- 2	0	12.86	- 86.67	0.29	30.478586	- 35361	10	4
	12	15	11	3.515	+31.814	- 2	1	39.53	- 74.89	0.29	30.443225	- 39100	9	49
	16	15	11	35.329	+30.746	- 2	2	54.42	- 62.90	0.29	30.404125	- 42685	9	34
	20	15	12	6.075	+29.556	- 2	3	57.32	- 50.69	0.29	30.361440	- 46098	9	18
	24	15	12	35.631	+28.244	- 2	4	48.01	- 38.32	0.29	30.315342	- 49308	9	3
	28	15	13	3.875	+26.813	- 2	5	26.33	- 25.89	0.29	30.266034	- 52287	8	48

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	° ' "	"	"	AU	"	H M
JAN 1	15 13 30.688	+25.275	- 2 5 52.22	- 13.49	0.29	30.213747	- 55006	8 33
5	15 13 55.963	+23.641	- 2 6 5.71	- 1.24	0.29	30.158741	- 57451	8 17
9	15 14 19.604	+21.927	- 2 6 6.95	+ 10.86	0.29	30.101290	- 59629	8 2
13	15 14 41.531	+20.135	- 2 5 56.09	+ 22.80	0.29	30.041661	- 61543	7 47
17	15 15 1.666	+18.260	- 2 5 33.29	+ 34.55	0.29	29.980118	- 63184	7 31
21	15 15 19.926	+16.311	- 2 4 58.74	+ 46.05	0.29	29.916934	- 64527	7 16
25	15 15 36.237	+14.294	- 2 4 12.69	+ 57.20	0.29	29.852407	- 65553	7 0
29	15 15 50.531	+12.222	- 2 3 15.49	+ 67.89	0.30	29.786854	- 66241	6 45
FEB 2	15 16 2.753	+10.118	- 2 2 7.60	+ 78.03	0.30	29.720613	- 66594	6 29
6	15 16 12.871	+ 7.993	- 2 0 49.57	+ 87.60	0.30	29.654019	- 66628	6 14
10	15 16 20.864	+ 5.853	- 1 59 21.97	+ 96.64	0.30	29.587391	- 66358	5 58
14	15 16 26.717	+ 3.701	- 1 57 45.33	+105.10	0.30	29.521033	- 65781	5 43
18	15 16 30.418	+ 1.541	- 1 56 0.23	+112.91	0.30	29.455252	- 64884	5 27
22	15 16 31.959	- 0.612	- 1 54 7.32	+120.01	0.30	29.390368	- 63660	5 11
26	15 16 31.347	- 2.742	- 1 52 7.31	+126.27	0.30	29.326708	- 62101	4 55
MAR 2	15 16 28.605	- 4.827	- 1 50 1.04	+131.67	0.30	29.264607	- 60227	4 40
6	15 16 23.778	- 6.854	- 1 47 49.37	+136.19	0.30	29.204380	- 58068	4 24
10	15 16 16.924	- 8.821	- 1 45 33.18	+139.90	0.30	29.146312	- 55643	4 8
14	15 16 8.103	-10.723	- 1 43 13.28	+142.78	0.30	29.090669	- 52964	3 52
18	15 15 57.380	-12.553	- 1 40 50.50	+144.78	0.30	29.037705	- 50026	3 36
22	15 15 44.827	-14.300	- 1 38 25.72	+145.85	0.30	28.987679	- 46835	3 20
26	15 15 30.527	-15.948	- 1 35 59.87	+145.93	0.30	28.940844	- 43395	3 4
30	15 15 14.579	-17.476	- 1 33 33.94	+144.99	0.30	28.897449	- 39739	2 48
APR 3	15 14 57.103	-18.876	- 1 31 8.95	+143.13	0.30	28.857710	- 35907	2 32
7	15 14 38.227	-20.150	- 1 28 45.82	+140.39	0.31	28.821803	- 31927	2 16
11	15 14 18.077	-21.299	- 1 26 25.43	+136.80	0.31	28.789876	- 27809	2 0
15	15 13 56.778	-22.316	- 1 24 8.63	+132.36	0.31	28.762067	- 23562	1 44
19	15 13 34.462	-23.197	- 1 21 56.27	+127.04	0.31	28.738505	- 19197	1 28
23	15 13 11.265	-23.927	- 1 19 49.23	+120.82	0.31	28.719308	- 14726	1 12
27	15 12 47.338	-24.494	- 1 17 48.41	+113.74	0.31	28.704582	- 10189	0 56
MAY 1	15 12 22.844	-24.897	- 1 15 54.67	+105.92	0.31	28.694393	- 5630	0 40
5	15 11 57.947	-25.146	- 1 14 8.75	+ 97.46	0.31	28.688763	- 1075	0 24
9	15 11 32.801	-25.244	- 1 12 31.29	+ 88.38	0.31	28.687688	+ 3463	0 7
13	15 11 7.557	-25.195	- 1 11 2.91	+ 78.73	0.31	28.691151	+ 7978	23 47
17	15 10 42.362	-24.996	- 1 9 44.18	+ 68.50	0.31	28.699129	+ 12457	23 31
21	15 10 17.366	-24.640	- 1 8 35.68	+ 57.70	0.31	28.711586	+ 16884	23 15
25	15 9 52.726	-24.123	- 1 7 37.98	+ 46.43	0.31	28.728470	+ 21223	22 59
29	15 9 28.603	-23.453	- 1 6 51.55	+ 34.79	0.31	28.749693	+ 25427	22 43
JUNE 2	15 9 5.150	-22.643	- 1 6 16.76	+ 22.93	0.31	28.775120	+ 29481	22 27
6	15 8 42.507	-21.705	- 1 5 53.83	+ 10.87	0.31	28.804601	+ 33381	22 11
10	15 8 20.802	-20.647	- 1 5 42.96	- 1.36	0.30	28.837982	+ 37118	21 54
14	15 8 0.155	-19.468	- 1 5 44.32	- 13.73	0.30	28.875100	+ 40692	21 38
18	15 7 40.687	-18.168	- 1 5 58.05	- 26.23	0.30	28.915792	+ 44084	21 22
22	15 7 22.519	-16.748	- 1 6 24.28	- 38.76	0.30	28.959876	+ 47261	21 6
26	15 7 5.771	-15.222	- 1 7 3.04	- 51.18	0.30	29.007137	+ 50191	20 50
30	15 6 50.549	-13.609	- 1 7 54.22	- 63.41	0.30	29.057328	+ 52865	20 34

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DATE	RA (1950.0)	DIFF	DEC (1950.0)	DIFF	HP	TRUE DIST	DIFF	ET TRANS
	H M S	S	O ° "	"	"	AU		H M
JULY 4	15 6 36.940	-11.919	- 1 8 57.63	- 75.40	0.30	29.110193	+ 55290	20 18
8	15 6 25.021	-10.165	- 1 10 13.03	- 87.15	0.30	29.165483	+ 57464	20 2
12	15 6 14.856	- 8.346	- 1 11 40.18	- 98.65	0.30	29.222947	+ 59393	19 47
16	15 6 6.510	- 6.464	- 1 13 18.83	-109.87	0.30	29.282340	+ 61064	19 31
20	15 6 0.046	- 4.525	- 1 15 8.70	-120.73	0.30	29.343404	+ 62451	19 15
24	15 5 55.521	- 2.544	- 1 17 9.43	-131.11	0.30	29.405855	+ 63530	18 59
28	15 5 52.977	- 0.539	- 1 19 20.54	-140.94	0.30	29.469385	+ 64309	18 43
AUG 1	15 5 52.438	+ 1.476	- 1 21 41.48	-150.24	0.30	29.533694	+ 64797	18 28
5	15 5 53.914	+ 3.496	- 1 24 11.72	-158.97	0.30	29.598491	+ 65007	18 12
9	15 5 57.410	+ 5.516	- 1 26 50.69	-167.17	0.30	29.663498	+ 64947	17 56
13	15 6 2.926	+ 7.537	- 1 29 37.86	-174.83	0.30	29.728445	+ 64609	17 41
17	15 6 10.463	+ 9.555	- 1 32 32.69	-181.87	0.30	29.793054	+ 63976	17 25
21	15 6 20.018	+11.549	- 1 35 34.56	-188.19	0.29	29.857030	+ 63037	17 9
25	15 6 31.567	+13.507	- 1 38 42.75	-193.77	0.29	29.920067	+ 61804	16 54
29	15 6 45.074	+15.417	- 1 41 56.52	-198.61	0.29	29.981871	+ 60300	16 38
SEPT 2	15 7 0.491	+17.274	- 1 45 15.13	-202.74	0.29	30.042171	+ 58542	16 23
6	15 7 17.765	+19.078	- 1 48 37.87	-206.21	0.29	30.100713	+ 56545	16 8
10	15 7 36.843	+20.829	- 1 52 4.08	-208.99	0.29	30.157258	+ 54304	15 52
14	15 7 57.672	+22.523	- 1 55 33.07	-211.03	0.29	30.211562	+ 51810	15 37
18	15 8 20.195	+24.143	- 1 59 4.10	-212.27	0.29	30.263372	+ 49060	15 21
22	15 8 44.338	+25.675	- 2 2 36.37	-212.69	0.29	30.312432	+ 46080	15 6
26	15 9 10.013	+27.113	- 2 6 9.06	-212.34	0.29	30.358512	+ 42895	14 51
30	15 9 37.126	+28.454	- 2 9 41.40	-211.24	0.29	30.401407	+ 39529	14 35
OCT 4	15 10 5.580	+29.701	- 2 13 12.64	-209.48	0.29	30.440936	+ 36001	14 20
8	15 10 35.281	+30.855	- 2 16 42.12	-207.02	0.29	30.476937	+ 32312	14 5
12	15 11 6.136	+31.911	- 2 20 9.14	-203.82	0.29	30.509249	+ 28456	13 50
16	15 11 38.047	+32.855	- 2 23 32.96	-199.86	0.29	30.537705	+ 24443	13 35
20	15 12 10.902	+33.677	- 2 26 52.82	-195.14	0.29	30.562148	+ 20303	13 19
24	15 12 44.579	+34.373	- 2 30 7.96	-189.73	0.29	30.582451	+ 16066	13 4
28	15 13 18.952	+34.943	- 2 33 17.69	-183.68	0.29	30.598517	+ 11764	12 49
NOV 1	15 13 53.895	+35.391	- 2 36 21.37	-177.04	0.29	30.610281	+ 7416	12 34
5	15 14 29.286	+35.723	- 2 39 18.41	-169.84	0.29	30.617697	+ 3025	12 19
9	15 15 5.009	+35.933	- 2 42 8.25	-162.03	0.29	30.620722	- 1410	12 4
13	15 15 40.942	+36.011	- 2 44 50.28	-153.61	0.29	30.619312	- 5870	11 49
17	15 16 16.953	+35.948	- 2 47 23.89	-144.61	0.29	30.613442	- 10322	11 33
21	15 16 52.901	+35.746	- 2 49 48.50	-135.12	0.29	30.603120	- 14732	11 18
25	15 17 28.647	+35.407	- 2 52 3.62	-125.20	0.29	30.588388	- 19070	11 3
29	15 18 4.054	+34.939	- 2 54 8.82	-114.92	0.29	30.569318	- 23314	10 48
DEC 3	15 18 38.993	+34.353	- 2 56 3.74	-104.32	0.29	30.546004	- 27461	10 33
7	15 19 13.346	+33.641	- 2 57 48.06	- 93.35	0.29	30.518543	- 31514	10 18
11	15 19 46.987	+32.797	- 2 59 21.41	- 82.04	0.29	30.487029	- 35448	10 3
15	15 20 19.784	+31.819	- 3 0 43.45	- 70.45	0.29	30.451581	- 39231	9 47
19	15 20 51.603	+30.712	- 3 1 53.90	- 58.68	0.29	30.412350	- 42829	9 32
23	15 21 22.315	+29.483	- 3 2 52.58	- 46.82	0.29	30.369521	- 46217	9 17
27	15 21 51.798	+28.144	- 3 3 39.40	- 34.92	0.29	30.323304	- 49378	9 2
31	15 22 19.942	+26.708	- 3 4 14.32	- 23.03	0.29	30.273926	- 52316	8 46